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The International Journal of Medicine in Industry

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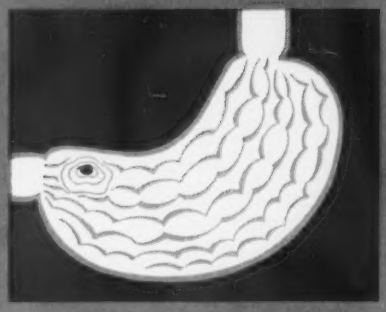

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VOLUME XXX
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PERSONAL NEWS AND NOTES

SEWARD E. MILLER, M.D., for the past five years Director of the Institute of Industrial Health, University of Michigan, will resign from this position on July 1, 1961, to develop and operate the Laboratory of Environmental Physiology in the Biological Department of the Defense Systems Division of the General Motors Corporation. This laboratory, to be located at Santa Barbara, California, will undertake basic and applied research in conjunction with the needs of the Space-Air, the Land, and the Sea Departments of this newly organized Division. DR. MILLER will complete his commitments at the University of Michigan through June of this year, as Director of the Institute and continuing his appointments as Professor of Internal Medicine in the Medical School and Professor of Industrial Health in the School of Public Health until July 1.

In 1960, DR. MILLER retired from the Public Health Service after 29 years in a number of divisions which included development of the pathological laboratories of the Communicable Disease Center in Atlanta and direction of the Occupational Health Program.

C. CRAIG WRIGHT, M.D., has been appointed Corporation flight surgeon and assistant chief physician, Pittsburgh general office, United States Steel Corporation, it was announced by ROBERT B. O'CONNOR, M.D., Medical Director. DR. WRIGHT comes to his new position from Reynolds Metals Company where he had served as Medical Director for the firm's northern Alabama Listerhill plants. He will be responsible for all medical aspects of U. S. Steel's Aircraft Division operations.

DR. WRIGHT is a 1953 graduate of Ohio State University from which he also holds B. A. and M.S. degrees. He interned at New York City's Bellevue Hospital and, following two years active service as a medical officer in the United States Air Force, returned to Ohio State University for three years of residency training in Preventive Medicine as the Link Foundation Fellow in Aviation Medicine.

HERBERT K. ABRAMS, M.D., Medical Director of the Union Health Service, Inc., has been appointed special consultant on industrial hygiene to the Illinois Department of Labor.

DR. ABRAMS has been Medical Director of the Union Health Service since it was organized 10 years ago. He is also Clinical Assistant Professor of Public Health at the University of Illinois College of Medicine.

HERMAN J. BENNETT, M.D., IBM Medical Director at Poughkeepsie, New York, was recently appointed by the Vassar Board of Trustees to the Consultant Staff of Vassar Brothers Hospital as a consultant in Public Health and Industrial Medicine.

DR. BENNETT joined IBM in 1956 as Medical Director of the IBM Poughkeepsie Plant. He holds a Bachelor of Science degree from New York University; Doctor of Medicine, University of Vienna; and a Master of Public Health from Columbia University.

He is a member of the American Board of Preventive Medicine in Occupational Medicine, American Public Health Association, Industrial Medical Association, American Academy of Occupational Medicine, American College of Preventive Medicine, American Medical Association, and National Rehabilitation Association.

EDWARD V. HENSON, M.D., Medical Director of the Union Carbide Chemicals Company's plant in South Carolina since

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Seventy-Third Annual Meeting

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For complete information about Forhistal (including dosage, cautions, and side effects), see Physicians' Desk Reference or write CIBA, Summit, N.J.

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1947, has been appointed Medical Research Associate in the General Office of the Medical Department of the Standard Oil Co. of Indiana, in Chicago.

E. QUENTIN HULL, M.D., was named Medical Director of Union Carbide Chemicals Company, South Charleston, Va., on December 27, 1960.

DR. HULL received his A.B. and B.S. degrees from West Virginia University, and then was graduated from Northwestern University Medical School with a B.M. and M.D. He was an industrial physician for E. I. du Pont de Nemours Company for nine years, and came to Carbide from the Gallipolis, Ohio, Clinic. DR. HULL served two years as a captain in the U.S. Army Medical Corps. He is a member of the American Academy of Occupational Medicine, Industrial Medical Association, American College of Preventive Medicine, and the American Medical Association.

The next "Short Course in Audiology" will be presented by Temple University School of Medicine and Hospital June 19 through 23, 1961.

Further information may be obtained by writing to PHILIP E. ROSENBERG, PH.D., Director, Section of Audiology, Temple University Medical Center, 3401 North Broad St., Philadelphia, Pa.

The New England Industrial Nurses Association will hold its 46th Annual Conference at the Lookout Hotel, Ogunquit, Maine, June 23 through 25th, 1961, with the Maine Association serving as the hostess group. For further information, write, MARGUERITE MAXIM, R.N., Continental Mills, Lewiston, Maine.

PAUL E. LONGAKER, M.D., has succeeded PATRICK H. KENNEDY, M.D., as Supervisor of the hospital and Medical Department of The Youngstown Sheet and Tube Company's Youngstown district operations.

DR. KENNEDY retired on April 1 after serving with the company for 37 years. He has headed the department since 1932.

A native of Akron, DR. LONGAKER earned his medical degree at Ohio State University. He served twice in the U. S. Army, first in 1945-46 in Europe and again in 1951 during the Korean conflict.

DR. LONGAKER entered the field of industrial medicine in 1960 as Medical Director of U. S. Steel's American Steel and Wire Division at Joliet, Ill.

Western Industrial Medical Association will meet in October at the Biltmore Hotel, Los Angeles. For further information, write BIRCHARD M. BRUNDAGE, M.D., Atomics International, P. O. Box 309, Canoga Park, Cal.

EMIL PALMQUIST, M.D., has been appointed Medical Dirctor of the regional office of the Department of Health, Education, and Welfare in Charlottsville, Va. DR. PALMQUIST will be responsible for the administration of grants-in-aid and various types of technical assistance which the Public Health Service makes available to the health departments of the District of Columbia, Kentucky, Maryland, North Carolina, Virginia, West Virginia, Puerto Rico and the Virgin Islands.

A graduate of Northwestern University School of Medicine, DR. PALMQUIST has been a commissioned officer in the Public Health Service since 1950 and is currently a public health consultant in the San Francisco regional office of the Department of Health, Education, and Welfare. He has had a number of foreign assignments, the most recent, a 5-week study of the public health program of the U. S. Mission in Pakistan.

DR. PALMQUIST replaces EUGENE GILLIS, M.D., who recently became Health Officer of Philadelphia.

As the new Director of the Industrial Hygiene and Toxicology Section of the Hazards Control Department at the Lawrence Radiation Laboratory, University of California, MR. ROSS KUSIAN has begun publishing *Hazards Control Information Exchange Bulletin.* This bulletin will be sent to anyone interested in occupational health, safety, and allied fields, who writes to MR. KUSIAN at the following address: P. O. Box 808, Livermore, California.

MR. KUSIAN edited the *Occupational Health Newsletter* while he was a staff member of the Environmental Research Laboratory, University of Washington, School of Medicine.

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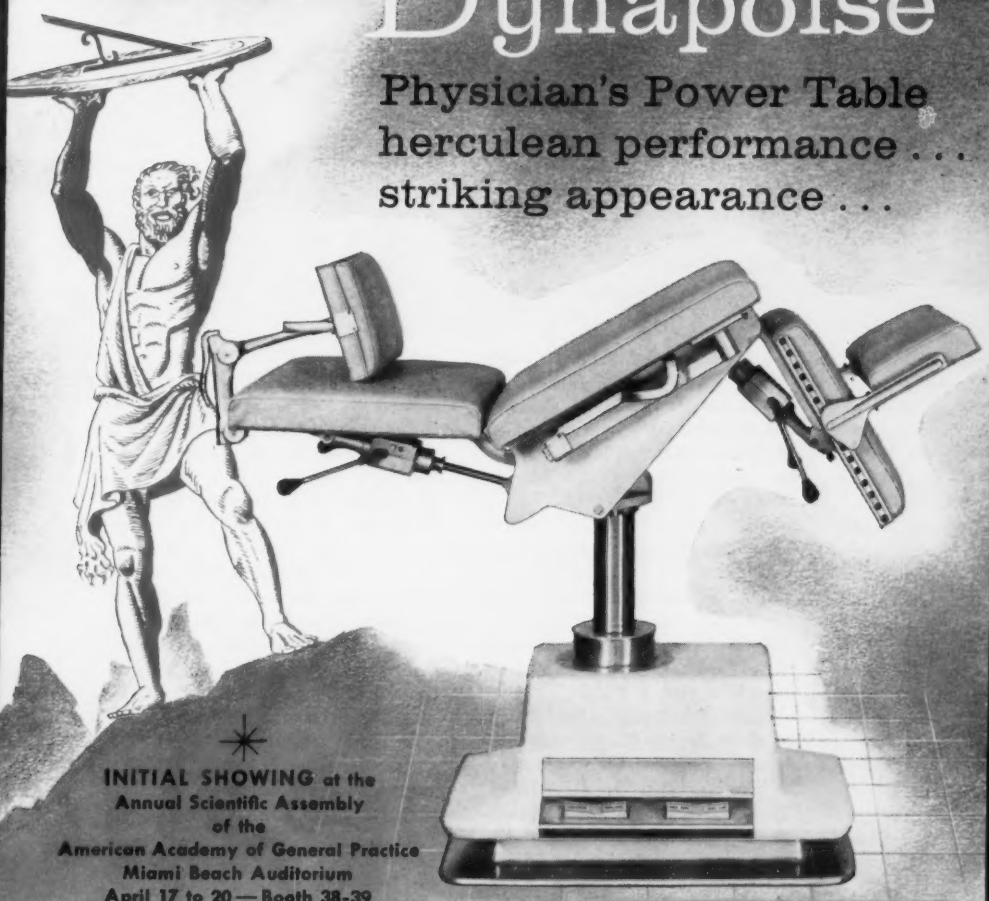

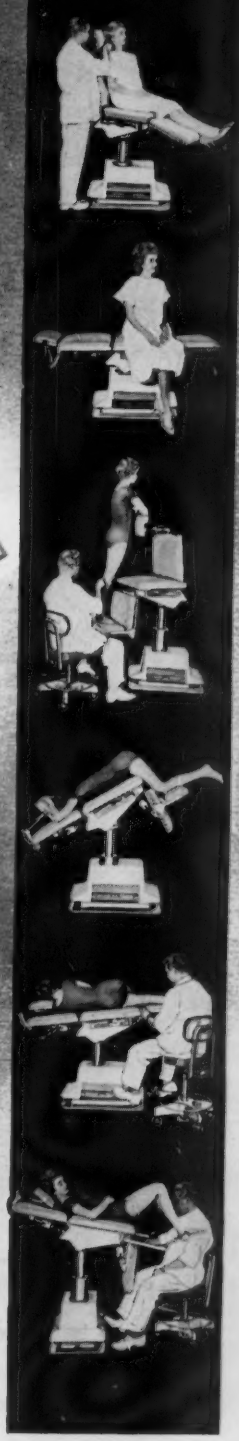

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Man and His Environment is the subject of the Second National Congress on Environmental Health which will be held at the School of Public Health, University of Michigan, Ann Arbor, June 6 through 8, 1961.

DR. HENRY F. VAUGHAN, President of the National Sanitation Foundation, is general chairman of this conference which is sponsored jointly by the University of Michigan School of Public Health, the American Public Health Association, and the National Sanitation Foundation.

For program material and additional information, write MR. HARRY MILLER, School of Public Health, University of Michigan, Ann Arbor.

THOMAS S. ELY, M.D., has been appointed Chief of the Health Protection Branch, Office of Health and Safety, U. S. Atomic Energy Commission, Washington, D. C.

DR. ELY received his M.D. Degree from Georgetown University Medical School in 1948, and interned at the U.S. Naval Hospital in Bethesda, Maryland. He joined the Atomic Energy Commission in 1956, and since then has been Assistant Chief of the Medical Branch of the Division of Biology and Medicine and Assistant Chief of the Health Protection Branch.

DR. ELY is a member of the Industrial Medical Association, the American Association for the Advancement of Science, and the American Academy of Occupational Medicine.

WILLIAM L. AVRETT, JR. has been appointed an industrial hygiene toxicologist by Socony Mobil Oil Company. Prior to his appointment, MR. AVRETT has been with Standard-Vacuum Oil Company for 12 years. He served as a sanitary engineer with the company in Indonesia before being transferred to Stan-Vac headquarters in White Plains as an industrial health engineer in 1956. His most recent position was that of safety and health adviser.

MR. AVRETT received a B.S. degree in chemical engineering from Georgia Institute of Technology in 1933, and an M.S. degree in sanitary engineering from Harvard University in 1938. During World War II he served with the medical department sanitary corps.

H. P. DASTUR, M.D., Chairman of the Executive Committee of the Council of Industrial Safety in Bombay, India, is the editor of the Council's quarterly *Journal* which began publication in July, 1960. An overseas editor of *Industrial Medicine and Surgery* and and Industrial Health Consultant in India, DR. DASTUR was, until his retirement in December, 1959, Chief Industrial Health Officer for Tata Services, Ltd., Bombay.

Congress on Occupational Health will meet October 3 and 4 at the Brown Palace Hotel, Denver. For information, write Council on Occupational Health, American Medical Association, 535 N. Dearborn St. Chicago 10, Ill.

The 1961 Gordon Research Conference on Toxicology and Safety Evaluations will be held August 7 to 11, 1961, at the Kimball Union Academy, Meriden, N.H. Chairman of this Conference is FRANK R. BLOOD.

Some of the papers which will be given during the five day conference are Safety Evaluations Using Humans, J. M. COON; The Evaluation of Toxic Materials Using Humans, M. L. KEPLINGER; Metabolism of Organophosphorus Pesticides, R. B. MARCH; Metabolism of Chlorinated Hydrocarbon Insecticides in Mammals, W. J. HAYES, JR.; Interpretation of Animal Toxicity Data in Human Safety Evaluation of Pesticides, M. R. ZAVON; A New Metabolic Approach in the Study of Carcinogenic Amines, J. A. MILLER; The Chemical Phase of Air Pollution in Confined Spaces, W. L. ANDERSON; Appraisal of the Safety of Substances Applied Topically to Skin and Mucous Membranes, J. H. DRAIZE; Predictive Methods for Recognizing Cutaneous Allergens and Irritants, A. M. KLIGMAN; Drug Interaction and Safety Evaluation, H. M. PECK.

The Gordon Research Conferences were established to stimulate research in universities, research foundations and industrial laboratories. This purpose is achieved by informal meetings consisting of lectures and discussion groups. Meetings are held in the morning and in the evening; the afternoons are available for recreation, reading, or participation in discussion groups as the individual desires. This type of meeting is a valuable means of disseminating information and ideas to an extent that could not be achieved through the usual channels of publication and presentation at scientific meetings. In addition, scientists in related fields become acquainted, and valuable associations are formed that often result in collaboration and cooperative efforts between different laboratories. The purpose of the program is to bring experts up to date on the latest developments, to analyze the significance of these developments, and to provoke suggestions concerning the underlying theories and profitable methods of approach for making progress. The review of known information is not desired. Individuals interested in attending the Conference are requested to send their applications to the Director by June 7, 1961. Attendance at each Conference is limited to approximately 100 conferees.

The fixed fee of $100 covers registration, room (except room with private bath or single room), meals and gratuities for resident conferees. It will not provide for personal expenses. Conferees living at the Conference location who will pay all or part of the fixed fee as a personal expense may request a reduction of $25.

Requests for application forms or for additional information should be addressed to W. GEORGE PARKS, Director, Department of Chemistry, University of Rhode Island, Kingston, R. I. From June 12 to September 1, 1961, mail for the office of the Director should be addressed to Colby Junior College, New London, N. H.

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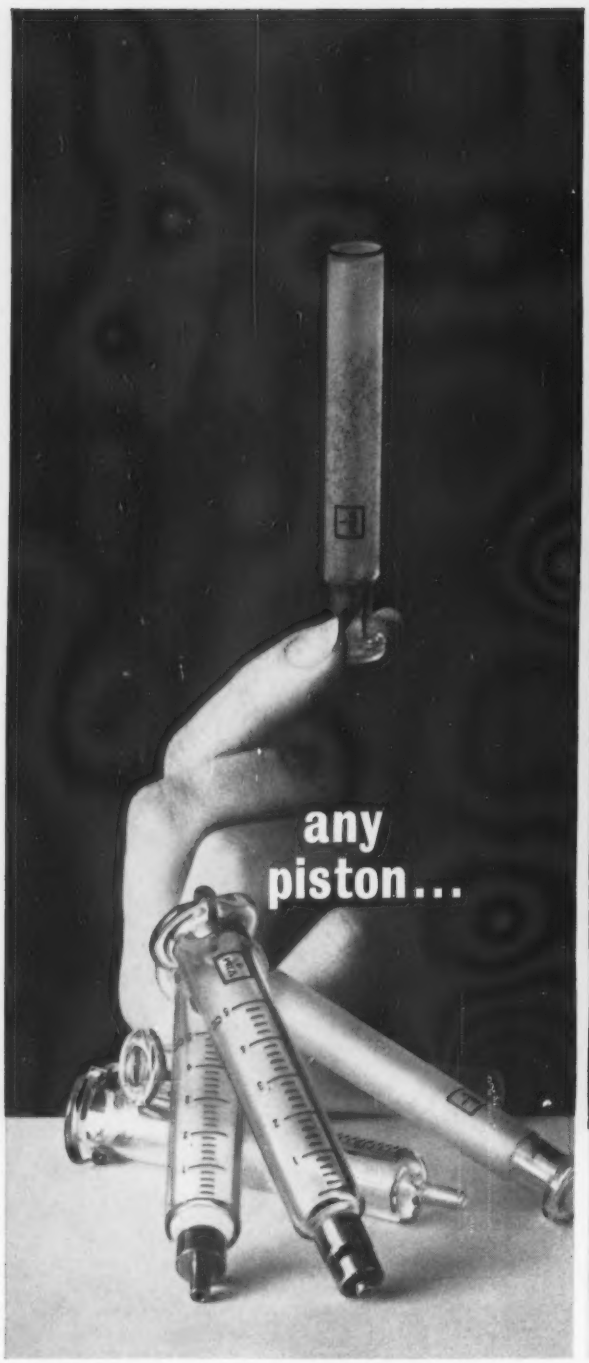

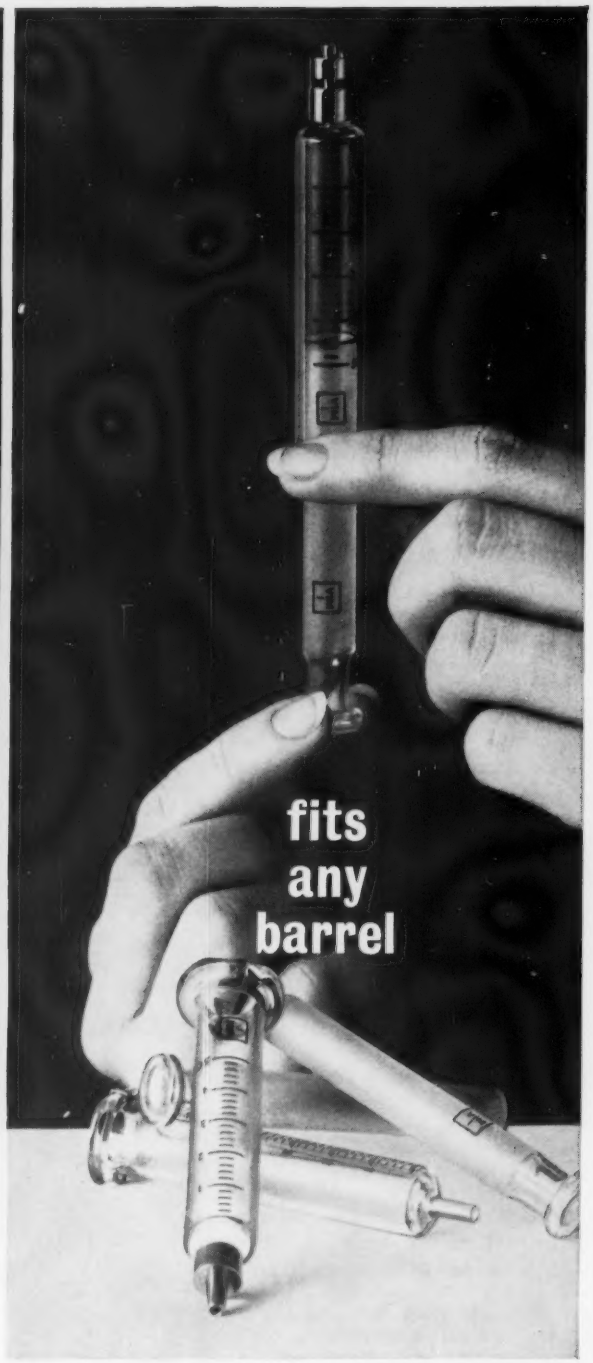

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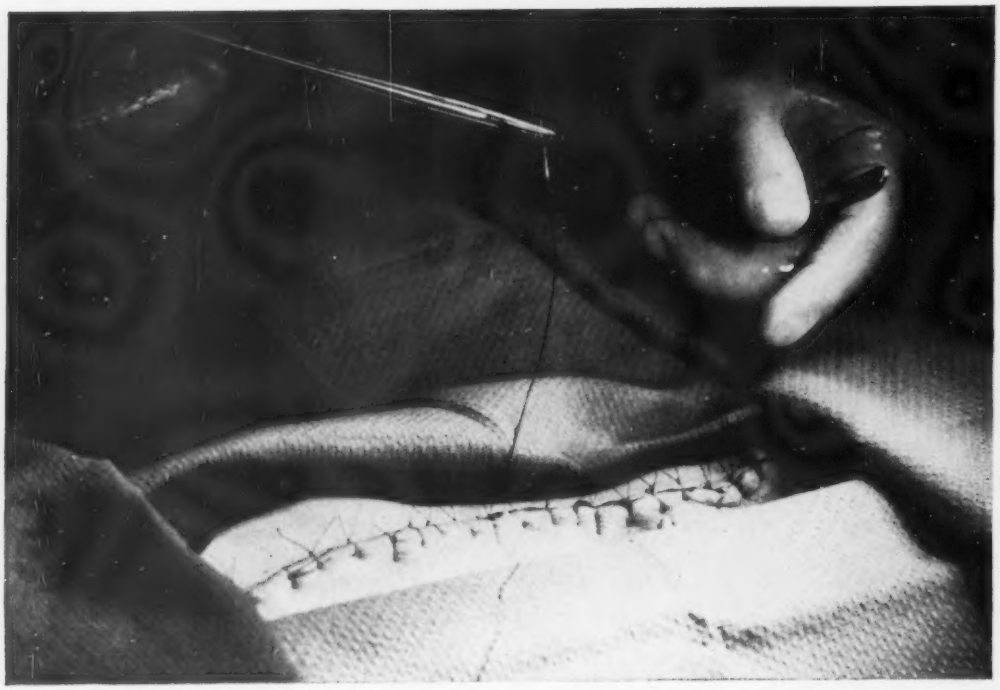

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2. Cigarroa, L. G.: J. Internat. Coll. Surgeons *34*:442, 1960.
3. Moore, F. T.: Brit. J. Plastic Surg. *11*:335, 1959. 4. Personal Communications to the Medical Department, Armour Pharmaceutical Company, 1959.

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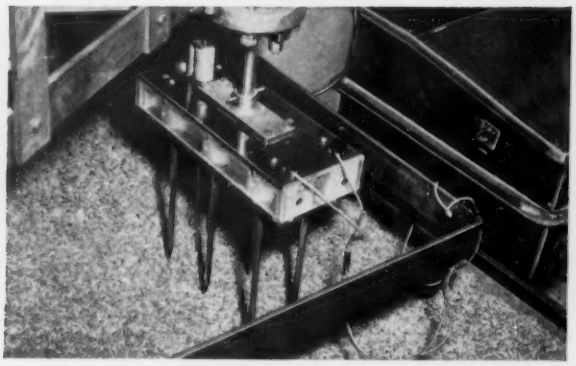

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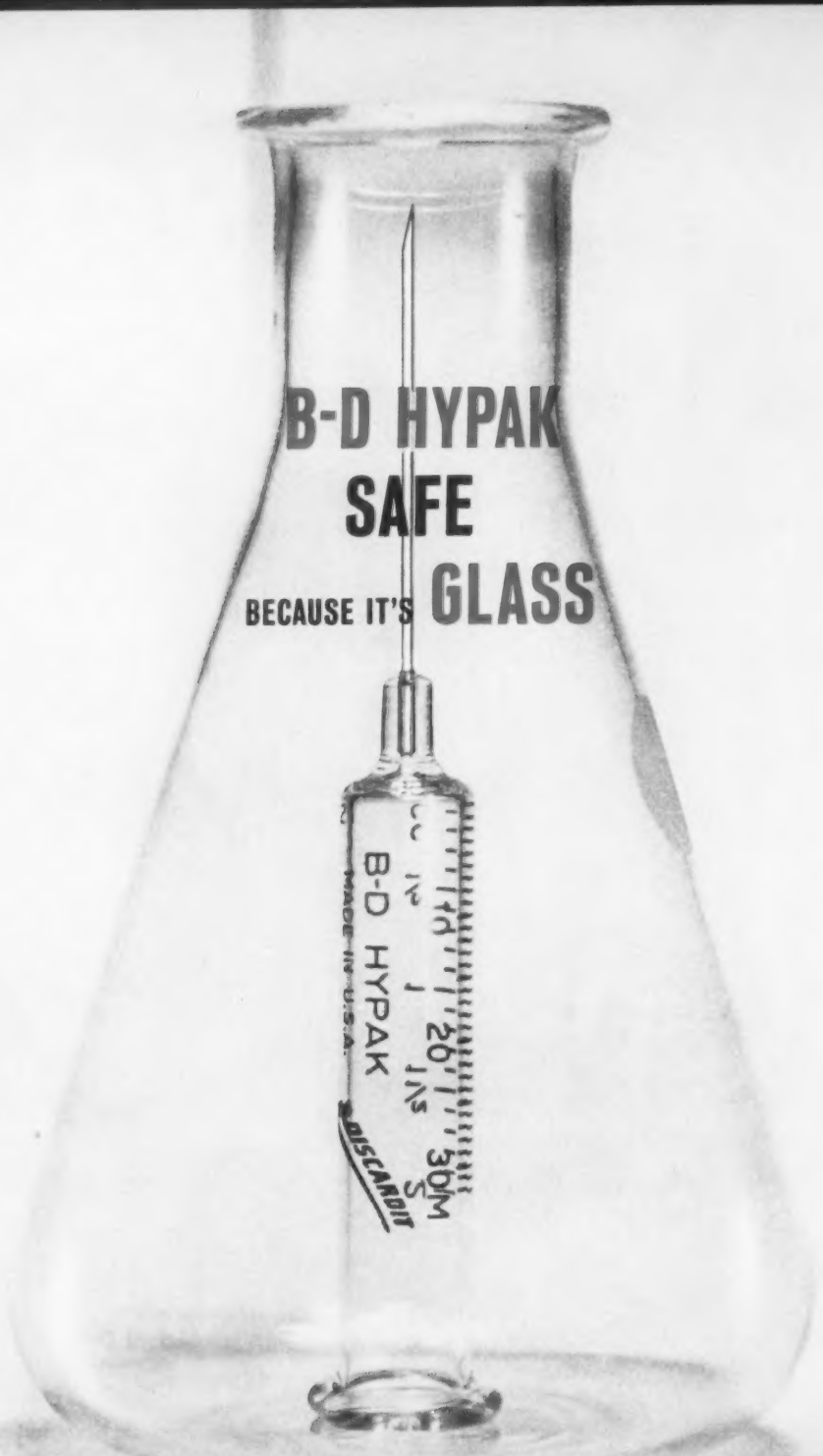

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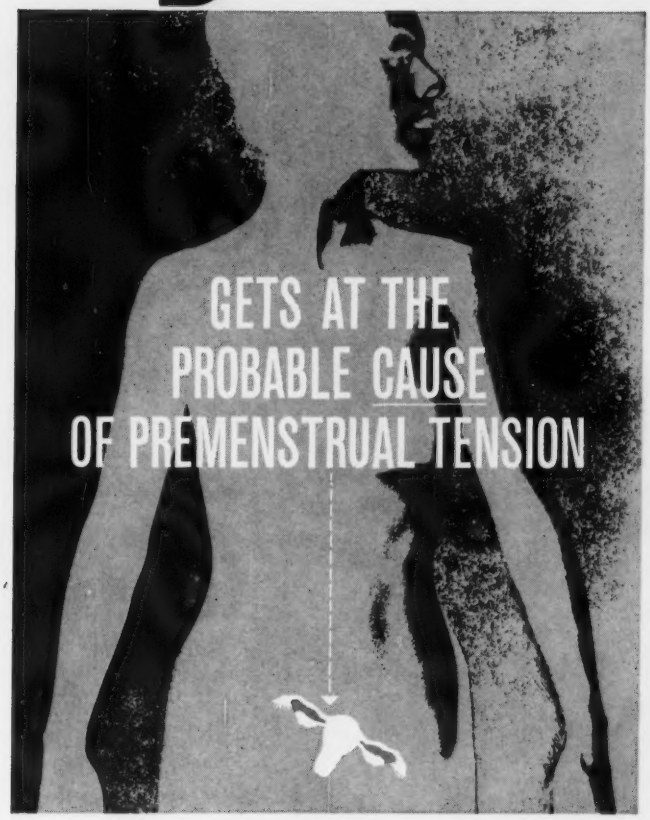

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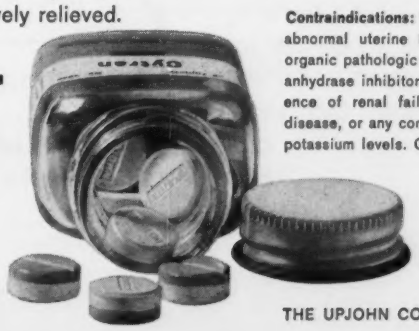

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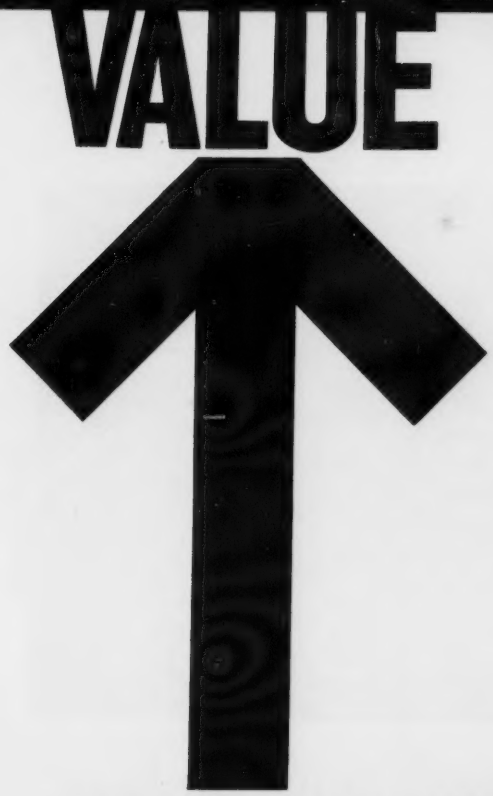

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IMS

Emotional Problems in Industry: Recognition and Preventive Measures

• LEONARD E. HIMLER, M.D.
Mercywood Sanitarium
Ann Arbor, Michigan

It is well known that emotional problems occur in as many as one half of the employees who come to the attention of industrial medical departments. The industrial physician has great need for practical, effective, but also streamlined methods of appraising the factor of emotional stability. Recognition of the degree to which emotional involvement is a part of the patient's problem or complaint should be an integral aspect of the medical interview. Such an approach should be woven into both the therapeutic and the preventive aspects of comprehensive medical care.

The industrial physician is obviously obliged to keep in sharp focus those emotional problems which relate to the successful performance of the employee in the enterprise which they both serve. He is particularly interested in detecting types of emotional involvement that can or that may be expected to reduce efficiency, complicate medical treatment for any related organic disorder, damage interpersonal relations on the job, lead to unjustified compensation claims, and increase liability to accidents. Recognition of emotional problems can take place at the time the history is taken and a clinical picture of the situation is formulated on the basis of examination and interview. Interviewing techniques must, of course, be adapted to the type of emotional symptomatology which is revealed, the goal being constantly to clarify underlying causes that the individual himself can influence constructively.

It is true that emotional problems derive from many intangible, complex, and interrelated factors. Some are rooted in the individual's basic personality structure and become more clearly manifest as he passes through the stages of growth which coincide with his occupational career. Others seem to be associated with physical disorder or handicapping disability which places special strain on the individual's capacity to adapt. Another group of emotional reactions seem to grow directly out of external environmental forces or interpersonal conflicts, which in the work situation are referred to as occupational stress.

Unfortunately, with respect to etiology there

Address given at Ford Medical Conference, Dearborn, Michigan, June 9, 1960.

is seldom a clear single causative agent such as trauma or infection to account for the illness or disability. Instead, there is a whole field of forces in which cause and effect, primary and secondary factors, personality background and situational stress are all intertwined. These are sometimes referred to as the four P's: "Predisposing," "provoking," "precipitating," and "perpetuating" factors. As a result of this network of interrelated influences it is often difficult to determine just when an emotional disorder had its beginning, when its major manifestations have run their course, and precisely when the condition has ended.

Of all the factors that determine the extent, severity and prognosis of occupational mental health problems, etiological considerations have special importance because they tend to point up two areas in which preventive applications are possible. The first concerns the recognition of personality factors antedating employment, and the second relates to the psychological stress factors on the job that may act as "triggers" of undue emotional conflict and tension. Second to the etiological considerations the matter of the psychiatric diagnosis also calls for attention. Closely associated with it is the involved problem of evaluating the effectiveness of whatever treatment has been received by the patient. Finally, there is need for recognition of the type of emotional support that should be given during the individual's readjustment phase following improvement or recovery from mental illness.

1. Personality Factors Antedating Employment

At the risk of some oversimplification, it may be said that industry must appraise each applicant for work in terms of three factors: native intelligence and ability, emotional reactions, and behavior. It is known that individuals can possess limitations in all three of these areas of personality make-up and still be satisfactory employees. Conceivably such individuals are more vulnerable than others to unusual stress, but with proper placement and capable supervision this aspect can be minimized.

But there is another group of individuals whose emotional reactions and behavior on the job cause much occupational maladjustment and social disturbance. This group makes up the 30% of employees who account for 80% of industrial personnel and medical problems. It is doubtful if all of such individuals could be screened out even by thorough personality studies at the time of the pre-employment examination.

In one study it was found that the more seriously disturbed members of such a group were characterized by such descriptive terms as: arrogant, distrustful, evasive, hostile, irresponsible, self-centered, smart-alec, suspicious, and "paranoid attitude." Less serious personality vulnerability was exhibited by a second group who on pre-employment examination exhibited immaturity, excessive anxiety and tension, moodiness, overaggressiveness, and depression. The management of all such employees is a highly individual matter and must depend on more than can be conveyed by a brief descriptive label, but it is worthy of note that these qualities showed strong statistical correlations with absenteeism, accidents, medical visits, safety violations, unsatisfactory behavior, and shop rules violations.

It is important that a distinction be made between the extremely small group of individuals with marked personality disorder and the great majority of emotionally vulnerable individuals who with some support and understanding can be numbered among the more valuable workers. In the latter group the social climate of the place of work becomes a highly important preventive factor.

2. Psychological Stress Factors on the Job

Although it is true that in the great majority of individuals the emotional problems that originate off the job have greater influence, it remains a fact that there are certain job-related "triggers" that may act as releasing factors. The industrial environment may not only cause, but it may uncover emotional vulnerability. This is especially true in psychoneurotic individuals who in general are more sensitive and responsive to situational difficulties, interpersonal relations, and external demands.

On-the-job "triggers" of psychological stress may be classified into three main groups—those originating from management policies and personnel procedures, those arising from the human relations practices of supervision, and those arising from disturbing interemployee relationships. Under the first heading can be listed (1) inadequate induction and orientation of new employees; (2) unsuitable placement and assignment; (3) inadequate respect for personal worth, ignoring need for status recognition and symbols; (4) inadequate personnel and medical service, deficiencies in grievance procedure, communication, and counseling.

Deficiencies of supervisors may be due to incompetence, failure of their own mental health, or inadequate training. This may result in (1) failure to handle ordinary job problems such as worry, anxiety, employees not knowing what is expected, insecurity, job disappointment, wages, shift assignments, promotion, racial, religious and political conflicts, obvious abuses and infractions; (2) reprehensible practices such as

lack of enlightened discipline, public reprimand, punitive silence, favoritism, undercutting, and refusing to listen.

It is obvious that such problems cannot be corrected without awareness on the part of management and collaboration among all units responsible for enlightened human relations. In this the medical department should be leader, model and catalyst.

3. The Psychiatric Diagnosis

Industrial physicians are understandably reluctant to record a diagnosis in psychiatric terms except for the few instances where there is an episode of frank mental illness. Unfortunately, there is as yet no satisfactory and uniformly acceptable nomenclature for the minor adjustment problems and mental health problems seen in everyday industrial practice. Physicians are accustomed to making diagnoses in organic terms, and even though the functional element is the predominant factor in continued treatment of the patient, this diagnosis, even if made, is relegated to a secondary position. The problem becomes particularly conspicuous in the cases of chronic alcoholism where a series of diagnoses such as "gastritis," "bronchitis," and "colitis" is made, with no mention of the real problem.

Fortunately the exact psychiatric diagnosis is not a necessary prerequisite for treatment, nor is it dependable as a sole criterion for continued employment. The final and more accurate psychiatric diagnosis is often not made until after treatment has been carried along for some time. The degree of work impairment must be assessed from all the factors involved, including the basic motivation for work, the response to interpersonal relations on the job, the manner of onset, the duration of the illness, the result of treatment, and the absence of any serious residual personality change.

4. Recognition of Treatment Needs

Along with the recognition of serious or potentially dangerous emotional problems on the job, there is also a need to recognize the "who-what-when-where-and-how" of treatment for psychologic and psychiatric factors. This situation sometimes becomes so involved that the line of least resistance is followed — both the patient and the medical consultants continue a prolonged but only partly effective plan of treatment directed only against the associated physical symptoms and complaints.

The industrial physician must determine the limits of time available for on-the-job treatment of emotional disturbances. This is generally limited to first-aid methods of sympathetic listening, reassurance, palliative measures, and some nondirective counseling. The art of referral includes helping the patient to understand that his problem has an emotional basis and that his continued suffering despite the assistance given should motivate the proper consultation. Skills in listening and nondirective questioning will often help the patient crystallize his decision regarding the value of treatment.

The specific problems arising in the case of employees who have had previous psychiatric treatment and show evidence of further need, can best be resolved by consultation between the industrial physician and the outside therapist. A report of the progress and result of any such psychotherapy is often more helpful to the industrial physician than merely a diagnosis when decisions concerning reemployment must be made. This is obviously always an individual matter and it is not possible to handle these problems by a standardized routine. It is important to avoid the two hazards of a too early return to work or an unnecessary delay in rehabilitation on a job.

When hospitalization is required, it is a general rule that a convalescent period of at least two weeks is usually needed before the patient is ready to return to his regular work. This extension of the sick leave period offers a valuable opportunity for observation of the patient's progress. If he has had shock therapy this time is required for complete subsidence of fatigue states, return of memory, and remotivation for effort. A sufficient convalescent period also reduces the possibility of a relapse occurring with the increased stress of the readjustment stage at work. If relapses occur they usually become evident within two to four weeks after hospital treatment. Insufficient improvement for return to work in one to two months after hospitalization definitely affects the prognosis adversely.

5. The Readjustment Phase

The advent of an episode of mental illness is a trying experience for both the patient and for those with whom he is associated at work. Even with complete recovery a sensitive patient is often uneasily aware of the cautious acceptance of him by supervisors and fellow workers. In the case of schizophrenic patients insight may be poor or absent and this may be apparent to others, but the patient may nevertheless be in a sufficiently good remission to resume some type of work. The major consideration bearing on the possibility of postillness personality changes is that of accentuation of premorbid characteristics.

The return to work following mental illness is usually associated with some situational anxiety related to the patient's own uncertainties and his

fear of prejudice on the part of others. It is the responsibility of the patient's own therapist to orient him to this aspect of his readjustment, which often seems much more difficult than it actually is. Here the industrial physician has a constructive function to perform in his contacts with supervisors and those who work with the returning employee. Open channels of communication and a few well chosen words of reassurance can go far to prevent discouragement and break down walls of misunderstanding. The role of the industrial nurse is highly important at this juncture.

Many other special considerations are involved in the procedure of returning and maintaining patients with emotional problems at suitable work. These include such specific factors as insurance and compensation provisions, union policies, and any change in accident liability due to continued need for medication. It is essential for the supervisor to have both interest and understanding in all phases of this task. Fortunately only selected patients will require transfer, reassignment or special placement. Medical follow-up is, of course, inseparable from the entire process.

Summary

The special type of recognition which applies to emotional disorders is concerned with a constellation of many shifting factors, and both subjective and objective elements enter into the final judgment of the physician. These begin with an assessment of the personality factors antedating employment and carry over into a survey of the psychological stress factors growing out of employment. The employment or reemployment of individuals with emotional problems is determined less by the specific psychiatric diagnosis than by the outcome of the treatment. The term treatment in this context refers to the combination and coordination of psychological first-aid on the job with, at times, specialized outside psychiatric assistance. The feed-back of accumulated experience gained from problems of this type into supervisory conferences and training programs can become a strong preventive arm of industrial medicine.

Psychiatrists On the Assembly Line

The growing recognition of the importance of psychiatry to industry is indicated in the fact that a recent issue of *The Saturday Evening Post* (February 11, 1961) published the article, "Psychiatrists on the Assembly Line," by Jerome Ellison.

In spite of the fact that one authoritative estimate sets the cost of employees' absenteeism at $10,000,000,000 a year and atributes 50 to 80% of it to mental illness, not more than 200 firms now employ even a part-time psychiatrists.

Commenting that "erosion of mind and spirit in the productive labor force strikes the country where it hurts most" the author asserts that the industrial psychiatrist is management's most effective response.

Some Attitudes Commonly Found In Patients Injured on the Job

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During the psychiatric evaluation of Federal employees injured on the job we were impressed with what appeared to be a high incidence of spontaneous recitals of dissatisfaction with one or another aspect of the job on which the patient was injured. A review of the literature revealed studies which mention resentment as a factor in such neurotic reactions, but none could be found which were designed to investigate its incidence and its possible importance as a common etiologic factor. Therefore, we decided to study a group of these patients systematically to determine the actual incidence of this dissatisfaction.

Previous reports in the literature concerning neurotic reactions following trauma can be divided into those dealing with the classification of such reactions,[1,2] factors contributing to their production and/or continuation,[3] and methods of prevention and treatment.[4] Pokorney and Moore published an excellent review of the literature dealing with neuroses and compensation in 1953.[5]

Leggo[6] described resentment as an obstacle to recovery from injury on the job but gave no statistics regarding its incidence among injured employees.

Method and Scope of Study

Twenty-five patients are included in this study; 23 were consecutive referrals from the surgical service of the hospital and two were direct admissions to the psychiatric service. All were referred for psychiatric evaluation because of a disparity between their complaints and their physical findings.

Each of these patients was a beneficiary of the Bureau of Employees Compensation which is that section of the Department of Labor dealing with the treatment and adjudication of compensation for civilian Federal employees injured on the job.

The hospital charts of the patients were studied before the interview. In many instances these contained extensive records of previous medical treatment received by the patient at the direction of the Bureau of Employees Compensation. After the charts were reviewed each patient was interviewed for one hour or longer. All interviews were tape recorded, the microphone and recording apparatus being in full view of the patient.

The interviews were so structured that the patient had an opportunity spontaneously to express dissatisfaction and resentment concerning the job and accident in question. If this was not forthcoming specific questions regarding the details of the accident and circumstances surrounding it were asked. This was followed by taking a brief psychiatric history.

There were 22 white males, two Negro males, and one white female in the group. The age range of the patients at the time of the injuries in question was from 29 to 64; one patient was 29; 10 were 31 to 40 inclusive; eight, 41 to 50; five, 51 to 60, and one, aged 64. Eleven patients had sustained back injuries; four, injuries to various extremities; four, head injuries; one, a neck injury; one, a trunk injury; two, back and head injuries; one, a head and extremity injury, and one had received an electric shock of 2400 volts. Sixteen patients were classified as having had unskilled jobs; three, semiskilled jobs, and six, skilled jobs at the time of injury. Eight of the patients were interviewed within one year following their injuries; six, within two years; one, within three years; five, within four years; two, within five years, and three,

This study was conducted while M. F. Miller and C. L. Davis were on active duty and C. Watkins was a consultant at the United States Public Service Hospital, New Orleans, Louisiana and was supported in part by a grant from the U.S.P.H.S.

over five years; the longest interval being eight years.

Findings

Sixteen of the patients interviewed expressed resentment and/or dissatisfaction with the job. Whether this resentment actually antedated the accident or was retrospectively elaborated could not be accurately determined within the limits of this study. However, 15 of these 16 patients appeared to have been dissatisfied with various conditions on the job prior to the accident.

The resentments expressed by these 16 patients could be grouped into five broad categories. There were eight patients who felt that the work was too hard or tedious or that too much was expected of them by their supervisors. For example, one patient stated, "And I told him that the accident wouldn't have happened if I had had a helper at all times. Every time I'd ask one of them to help me he'd say, 'Well, we're busy.' " Another patient complained, "Well, it was when a shortage of help. I admit kind of my fault, kind of their fault. I guess I was trying a . . . job for two men. I shoulda had help." Still another patient said, "No, that was the second time I lifted the powder and so he (the foreman) put me holding that and I said, 'Boy, that bulk is bigger than I am, heavier than I am.' He said, 'Aw, you can lift it. Go ahead . . .' Of course, you have to do what they said."

Four patients felt that their injuries were due to some infraction of safety regulations on the part of their superiors. Two of the four stated that they had warned their supervisors of a particular work hazard prior to the accident. In both cases this warning was not heeded until the patient actually sustained his injury in connection with the unsafe situation. In both cases the safety hazard was remedied only after the patient's injury. This was brought out quite well by one patient who said, "I told the chief cook, he's over in the hospital . . . I said, 'Chief, somebody's gonna get their damn neck broke.' " This same patient later stated, "Oh yeah, they could put the damn thing around after they knocked me out and broke me up. Yeah, they'd had a Government order. Couldn't do that though till it killed a man."

One patient complained that no matter how hard he worked his supervisor would not recommend him for a raise in salary. The patient said, "And I worked so many hours I was supposed to get a raise. I never did get it and the other hands got it. And I went back and I still didn't get it. . . . I was the lowest paid man on the crew. . . . He (the foreman) just got it in for me."

Two patients expressed resentment about incompetent fellow employees. One of these expressed resentment about the inefficiency of a 70 year old fellow employee who refused to accept recommended retirement and whose inefficiency resulted in the patient's being injured. The employee accepted retirement after the accident.

One patient resented his fellow employees who were making him the brunt of cruel jokes because he was "nervous and irritable" on the job.

Resentment was expressed about various aspects of the patient's postaccident care and administrative handling. Nine of the 25 patients expressed dissatisfaction with the quality of first-aid treatment afforded them. One patient said, "Dr. X and he was pretty well teed up (drunk) that morning. He didn't give me x-rays. He started to work to give me a hypo and the nurse said, 'I'll give him a shot, Doc.' . . . They finally got rid of him. I believe that if I'd got attention then I wouldn't have been so bad." Another patient complained, "They had an x-ray machine, one right there on the job but they didn't give any medical aid to my bruised places. My wife did that the next morning." Eleven patients expressed resentment about the quality of medical care given them by the Government following their first-aid treatment. For instance, one patient said, "Dear Lord, don't let me have any ill will toward the doctor and let him go ahead and practice and serve humanity but don't let him do like he did me."

Eleven patients expressed resentment about the administration of their accident reports, compensation claims, and their attempts to return to work in positions other than the ones on which they were injured. For example, one patient said, "I sure did (write to Congressman) that they were supposed to pay me. They had crippled me and he (the M.D.) had done, I think, all that he could do. I think it's awful as much money as they have in Washington and then a man have to go in need of something whenever he was crippled with them." And another patient who wanted to return to work said, "So I went on down and they met me there. All of them met me there. . . . They had an Admiral out there at the time. . . . They got together and put me right out the gate. . . . Said I was endangering myself and all the rest to stay on the post."

Incidental Findings

Eighteen of the 25 patients reported doctors' statements regarding the severity of the injury, prolonged convalescence and poor prognosis with regard to full recovery. The patients appeared to have listened critically to the physicians for any statement which might be used as confirmation of their own feelings about the disabilities which they had. One patient said, "They told

me just what they could do and that it was going to be a long, long time before I could go back to work." This patient, on examination six months following his injury, was found to have no physical disability.

Similarly, another patient said, "He (the physician) said I was lucky to be alive. There wasn't very many people come out with just getting banged up that way. Usually when something like that happened they get killed." This patient also was found to have no physical disability.

Another patient said that the doctor took an x-ray of his neck and reported, " 'Man, you got a broken neck.' He said, 'I'm going to put you in the hospital.' He called my supervisor there and he wouldn't let me go nowhere but in the hospital. He said, 'You're walking around here on. . . . You're near your death and don't know it.' He said, 'You jerk your head a little bit. . . .' You see I couldn't turn my head a bit. It pulled down. He said, 'If you had I wouldn't give a nickel for your life.' He said, 'I'm not trying to scare you but. . . .' " This patient, examined 10 months after his injury, was found by the orthopedist to have only a 15% physical disability.

An interesting incidental finding was that 16 of the patients complained of a decrease in their sexual drive or impotence following the accident. This group was composed of 10 of the 13 patients who received back injuries and six who received injuries to other parts of the body, none to the genital region. In none of the above cases was there physical findings to explain the impotence or loss of sexual drive.

Comment

There were felt to be factors which limited the validity of information gained from the patients. All of the patients, although sent to the hospital for evaluation, and treatment if indicated, were aware that the findings of the staff would determine the amount of compensation to be received. Those patients "satisfied" with their level of functioning felt it necessary to impress the interviewers with the severity of their symptoms. Many of these patients viewed the interviewers as adjudicators and it was obvious that they felt it would be to their detriment to reveal preaccident neurotic trends. Such information would have assisted us in explaining more logically the origins of their neurotic symptoms, thus allowing us to help the patients overcome their neurotic disabilities.

We feel that the incidence of resentment found was significant and that the resentment certainly influenced the production and particularly the continuation of the neurotic reactions seen among our patients. We feel that further study is indicated to determine whether:

1. Those patients who do not show a disparity between physical findings and complaints express a similar quantity and quality of resentment;

2. Federal employees injured on the job but able to return to work within a relatively short time after the injury express resentment of the order found among the patients in this study;

3. There is a significant difference in the incidence of neurotic reactions following injury between patients who prior to injury were known to have been resentful or dissatisfied with work and those who were not.

Summary

During the psychiatric evaluation of Federal employees injured on the job the authors were impressed with what appeared to be a high incidence of spontaneous recitals of dissatisfaction with one or another aspect of the job on which the patient was injured. Twenty-five patients, all of whom showed a disparity between their complaints and physical findings, were systematically studied. Sixteen of the 25 patients expressed resentment and/or dissatisfaction with the job. Resentment was also expressed about various aspects of the patients' postaccident and administrative handling.

Incidental findings which seemed of importance because of frequency were noted.

The authors concluded that the resentment found appeared to be a significant factor in the production and/or continuation of the neurotic reactions seen among these patients.

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A severe physical defect may not be a handicap on some jobs, while even a mild one may be a handicap on others. Physicians evaluating the ability of a disabled person must not only appraise the person, but also must analyze the job.

Measuring the Work Capacity of the Disabled

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It is a fairly simple matter for management to judge whether an applicant has the technical and intellectual requirements for a particular job. Written examinations, experience, education and training can usually disclose his ability. His physical and emotional fitness, however, is considerably more difficult to ascertain.

The physician who must decide whether this person can perform a specific job without hazard to himself or his co-workers needs to use more than pure medical knowledge, in order to offer a valid opinion. He is faced with even more of a challenge when he tries to determine the potential work power of a handicapped person. Familiarity with job requirements, knowledge of the public and private agencies which are concerned with the welfare, rehabilitation and placements of the disabled and the use of consultative services can often help the physician solve these more serious evaluation problems. Analyzing the demands of the specific job and appraising the prospective worker's abilities as they relate to that job are the essential objectives of any preemployment examination.

Analysis of the Job

The job description can usually be obtained from (1) the prospective employer, (2) the referring agency, (3) the United States Employment Service, or (4) the prospective employee. Included in this description should be details of (1) the physical demands of the job, (2) the emotional demands of the job, (3) working conditions, and (4) hazards involved.

Physical Demands of the Job

Class I (heavy): Includes jobs requiring climbing, carrying, lifting. This would include linemen, warehouse men, construction workers, lumbermen, miners, stevedores and other workers whose jobs depend largely on gross physical energy expenditure.

Class II (medium): Includes jobs requiring handling, fingering, manipulating. A limited amount of climbing, carrying, and lifting may be required. Assembly line and bench workers, clerical and sales workers and others whose jobs require mainly manual skills belong in this group.

Class III (light): Includes jobs requiring planning, inspecting, directing, and the use of fine hand skills. Little or no climbing, carrying, and lifting is involved. Watch repair, drafting, small appliance repair, interviewing and most sedentary jobs belong in this group.

Emotional Demands of the Job

Although a job description may include some of the emotional demands, the description is rarely adequate to give the physician a complete picture of these important factors. Since approximately 80% of today's jobs do not require tremendous muscular effort, failure to perform may often be due to an inability to meet the emotional demands. Pressures and tensions are potentially present in all jobs but the degree may vary from job to job, from industry to industry and even from area to area. The reaction

of the individual to these tensions is equally varied and must be considered on an individual basis. Today, new jobs created by technological advances, and modification of the old jobs by automation, while they are less demanding physically, have increased many of the factors causing emotional distress. Evaluating the degree of frustration, monotony, boredom and stress involved in the performance of a specific job will be of value when matching the applicant to the job.

Of no less importance is the role of the supervisor as success in employing the disabled is dependent on how the newly employed is placed, trained and supervised. This will help to ensure that a satisfactory adjustment is being made to this new environment.

Working Conditions

The details of the working conditions will give the examining physician an insight into the environment where the prospective worker will perform. This is important because, occasionally, a handicapped person may be able to manage a specific job adequately but be defeated by adverse environmental conditions. Therefore, information regarding the accessibility of work areas and toilet and lunch room facilities, the number of stairs with and without handrails, presence of elevators or ramps, and the availability of public or private transportation should be given careful consideration in addition to the more obvious conditions such as whether the work is indoors or outdoors, the temperature ranges, the working hours, the degree of humidity and air pollution, and whether the work will be done in cramped quarters, alone or with others, and at high or low altitudes.

Job Hazards

Modern safety practice and modern work methods have eliminated many of the occupational hazards of the past. Today, many accidents are believed to result from careless acts rather than from unsafe conditions. However, there are still industries that are considered hazardous: coal mining, lumbering, marine transportation, construction and trucking head the list.

Some of the factors to be looked for in reviewing the hazards of a specific job are the presence of moving objects, possibilities of falls from heights or on slippery floors and exposure to respiratory irritants, toxic material, radiation, noise and heat.

Appraisal of the Individual

Medical Examination: In order to estimate how the handicap will affect the performance of the proposed job, it will be of value to consider the following questions: Is the handicap permanent, temporary or progressive; is the nature of the handicap such that it might be aggravated by the performance of the job; will the handicap permit the individual to perform the job safely and without endangering his health or the health of his co-workers?

The nature of the work limitation should then be ascertained and recorded. This is important in order to be sure that the proposed job is compatible with the physical and emotional restrictions imposed by the handicap.

From our observations the most frequent limitations of workers in need of selective employment are (1) limitations due to defects in balance (walking, standing, sitting) and in upper extremity function (absent limb, lack of dexterity, sensory loss); (2) limitations of muscle strength (from weakness to paralysis); (3) psychologic and psychiatric limitations (intellect, reality, motivation, social orientation); (4) restrictions in joint mobility; (5) decreased physical and emotional tolerance (manifested by fatigue, pain lack of concentration, emotional instability); (6) visual auditory and speech impairments; (7) allergic reaction, and (8) multiple limitations (two or more of above).

The medical examination should then proceed to evaluate the remaining physical and emotional capacities of the individual to determine whether he can perform the job on a competitive basis in spite of the handicap. In other words, can he meet production standards in speed, endurance, and accuracy; can he use the existing lunch room, toilet facilities, stairs, elevators; can he use the existing transportation facilities?

For jobs in Class I (heavy) the physician should evaluate those physical abilities required for work entailing high expenditure of energy, ascertaining insofar as possible that muscle power, joint range of motion, body agility and flexibility, body balance and the functional capacity of the cardiovascular, respiratory and endocrine systems are adequate for the performance of the job.

Jobs in Class II (medium) require particular attention to visual acuity, upper extremity range of motion, manual dexterity and the required standing, walking or sitting endurance for the specific job.

In Class III (light) the emphasis of the examination should be on fine finger dexterity, hand-eye coordination, communication abilities (speech and writing), memory and intellectual ability.

An impression of the emotional status of the applicant in terms of the demands of the job should also be reported. His cooperation, moti-

vation, sociability, tolerance and emotional stability may be important factors in determining his vocational fitness.

When it is apparent that the applicant has the qualifications to meet all the demands of the job, then it is obvious that he is not handicapped for that particular occupation. If, however, there is a question as to the patient's emotional or physical ability to perform the job, the physician should try to determine whether the vocational outlook will change by advising on additional measures such as treatment (medical, surgical, psychiatric, physical rehabilitation) and/or job modification (rearrangement of working area, specially designed tools and equipment).

Work Assessment

Assessing the capacity of a handicapped person for various kinds of work is extremely valuable when dealing with the more difficult vocational placement problems. It is useful in determining the validity of a selected vocational goal and, where no definite goal has been arrived at, may direct the examiner toward suitable vocational objectives. This assessment may corroborate the selection of a previously advised vocational plan, and then again it may open up entirely new vocational possibilities.

In the Work Assessment Program at the May T. Morrison Center for Rehabilitation in San Francisco, the following methods are used.

The medical examination is carried out to determine the actual physical capacities and sets up the necessary work limitations. An estimation of functional capacity is given, based on diagnostic and prognostic factors. Tests of functional and daily living activities are given and recorded in detail. At this point, recommendations may be made as to treatment, prosthetic aids and further diagnostic or functional tests.

A work history is compiled by the vocational counselor based on information obtained from the patient and from former employers, school records, previous training, professional licenses, hobbies and interests.

The socioeconomic background is summarized by the Social Service Department. Information as to family history, economic level and community resources is made a part of this report.

Psychological testing is used to find out if the handicapped individual is emotionally and temperamentally suited for various kinds of work. Evaluation of intelligence, personality, interest and aptitude, as well as a psychiatric evaluation, may be needed.

With the foregoing information available, broad areas of employment possibilities become apparent. In order to investigate these areas and narrow them down to specific occupations, the Center has developed a series of work sampling procedures to test the patient's ability in a variety of job situations. The following six major occupational areas are explored: (1) subprofessional and technical, (2) clerical (computing, recording and public contact) (3) service (domestic and institutional), (4) mechanical and manual (skilled), (5) mechanical and manual (semiskilled), (6) elemental work (light, medium and heavy).

Work sampling is done under the supervision of registered occupational therapists, specially trained in this particular field, who report on work ability, rate of production, safety of performance, work habits, personal appearance, motivation and tolerance.

A try-out in an actual work situation may also be used to determine fitness. This might be done either at the place of employment or in the Center's sheltered workshop, under close supervision — usually in a ratio of one supervisor to two or three workers. At this Center for rehabilitation these trials in the workshop permit continuous observation of work aptitude, endurance, motivation, safety, work habits and ability to work with others.

Once the person has completed the selected series of examinations, tests and try-outs, a final staff conference is needed to establish a realistic and practical vocational plan. For some persons this might mean return to full-time competitive employment on a selected job; for others, part time or sheltered workshop employment might be advisable on a permanent or temporary basis. In certain cases, the emphasis might be on additional education, retraining or, perhaps, homebound work. In all cases where it is possible every community resource is brought into the evaluation procedure (i.e., vocational rehabilitation services, California Employment Service, insurance companies and others) and detailed reports on every phase are made available to the participating agency or the patient's physician.

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PLASTICS
in automobile body repair shops

In general, two types of resins have been encountered in automotive body repair work, polyester and epoxy. Both products contain chemicals that can be harmful to health and, also, present a potential fire hazard.

The repair process can be divided into the following steps: (1) preparation of plastic, (2) application, (3) curing (usually at room temperature), (4) finishing (sanding and grinding), and (5) painting. Personnel exposure problems in the first two steps involve skin contact as well as vapor inhalation. During curing operations, vapor inhalation is the potential hazard; and sanding and grinding involve dust exposures.

A number of body repair shops in the Seattle area have been visited. It was discovered that the use of polyester resins, at least in these shops, was somewhat limited. On an average, two gallons a month was the maximum utilized by any one shop. These plastic fillers were used primarily on older model cars. On the newer vehicles, either lead was used or the part was replaced. None of the shops surveyed employed epoxies although a few were contemplating its use sometime in the future.

Polyester Resins

All of the various trade-name polyester resins encountered were supplied as two-part systems. The unreacted resin was contained in gallon cans and was of a putty-like consistency, while the catalyst was supplied in small plastic squeeze bottles.

Due to the relatively minor amounts of polyester resins used, health hazards were considered minimal. Air-borne styrene concentrations were all well below the recommended Threshold Limit Value (TLV) of 100 parts per million. During the grinding and sanding operations, dust concentrations were rather high and some workers complained of irritations of the nose and throat. The use of approved type dust respirators should alleviate this problem.

A few cases of skin irritation of workers handling the resin was noted. It should be pointed out, however, that these same workers were also exposed to various solvents and at times their hands and arms were covered with grease and dirt. No doubt all of these materials contributed to the skin eruptions. This is one area in which more attention could and should be focused. Skin contact with solvents and resins should be avoided whenever possible, and good personal hygiene practices should be instituted. This, at present, appears to be the extent of the health hazards.

A more serious problem is that of fire or explosion. Styrene, a major constituent in polyester plastics, is one of the most chemically reactive materials utilized in the resin system. Styrene is flammable and forms explosive mixtures with air. It reacts violently with many common chemicals and polymerizes with the evolution of considerable heat. Probably the most active chemicals used are the organic peroxides, specifically methyl ethyl ketone peroxide, which are employed as catalysts. Organic peroxides contain their own oxygen and are, therefore, capable of burning vigorously even if smothered in carbon dioxide.

Violent explosions are possible as a result of minute shocks, heating or friction. The possibility of fire is further enhanced by the practice of using acetone for cleaning skin and equipment. Acetone presents a serious fire hazard due to its high volatility and its low flash point. There is at least one instance on record in which a fiber glass boat plant was completely destroyed by a fire started when a spark from an electric drill ignited acetone on the hands of a worker.

As mentioned previously, high atmospheric dust concentrations are often produced during sanding and grinding, and much of this dust consists of the filler materials. Since it is possible to utilize many different types of fillers in the resin system, concern is expressed over the possibility of ignition of air-borne dust. Fillers can be of an organic origin (wood flour, shell flour, soy bean meal, nylon fibers, etc.) or they may be of an inorganic nature such as asbestos, fiber glass, mica, etc.

In all of the various plastic systems that were examined, fiber glass filler was used exclusively. There is, however, the possibility that organic fillers may be encountered, in which case, it behooves the user to be cognizant of and to protect against the potential fire hazard. This means that all open flames and source of ignition must be eliminated from the work area when sanding and grinding. Fire prevention requires vigilance by all concerned and further demands the institution of good housekeeping practices.

Epoxy Resins

According to *Modern Plastics*, epoxy resin base solders are replacing lead and tin solders in automotive construction and repair. These synthetic body solders are used as thin section adhesive for new car joints and for used car repair. They are particularly useful in repairing such areas as trunks and doors. These parts formerly had to be replaced because of the heat generated when using lead solders.

Epoxy resin systems are produced by the reaction of epichlorohydrin with bisphenol and a curing agent, usually an amine compound. The principal health problems associated with epoxy resins are those of the amine hardeners. Some authorities consider that the epoxies and amine hardeners are the greatest single source of contact dermatitis in industry today.

The amines are not only irritants but are also sensitizers. If continual contact is permitted without some form of protection, skin reactions are likely to follow. Contact of the eyes with the amines can cause severe eye damage. Industrial hygiene surveys performed in some plants using epoxies indicated a dermatitis rate of as high as 40 to 60% with sensitization occurring in approximately 10% of the exposed workers. In fact, one reference relates the case of an employee working in a tool and pattern shop who developed dermatitis from an epoxy resin even though he was not working with or handling the material. The use of large quantities is not a prerequisite for the occurrence of health problems as is evidenced by an exposure occurring in a small plant engaged in the production of tape recording heads. Epoxy glue was utilized for cementing the parts in the head. Less than two ounces of the glue was used, and the operation consisted of applying small quantities of the glue with a toothpick. The employee engaged in this task developed a severe case of dermatitis.

It is desirable to provide all of the epoxy resin fabrication processes with ventilation control. The amines are caustic and can cause tissue damage upon direct contact with the skin. Most individuals who develop dermatitis will do so as a result of direct contact with the amine hardener; some, however, have contacted this irritation through vapor exposure.

Procedures which have been found the most successful in combating the effects on the skin of epoxies and amine hardeners are as follows: (1) adequate exhaust ventilation, especially during preparation of epoxies and at all other steps of the process; (2) adequate washing facilities; (3) frequent change of clothing; (4) use of protective equipment: (a) gloves (disposable liners), (b) aprons, and (c) face shields when necessary; and (5) good personal hygiene practices.

In summary, it is evident that when polyester resins are utilized, the major cause for concern is that of fire and explosion. Contact dermatitis with possible sensitization and eye contact are the problems associated with the use of epoxies. A precaution that is advisable when both epoxies and polyesters are used in the same shop is that these operations be entirely separated to prevent the accidental mixing of the epoxy amine hardener with the methyl ethyl ketone peroxide from the polyester resins.

It would be desirable to utilize one area in the shop for plastic body work, and, if possible, this location should be isolated from the rest of the shop.

Of course, as larger quantities of these materials are used, especially the polyesters, it is foreseeable that a special location similar to a paint spray booth will have to be provided. In any case, a program of worker-education in care to be exercised in handling the chemical substances is mandatory. The informed worker should be well prepared to handle the hazards associated with toxic materials and to utilize intelligently the protective equipment provided by the employer.

INDUSTRIAL HAZARDS CONTROL BULLETIN — EPOXY RESINS*

These resins are condensation products formed from epichlorohydrin and bis-phenol or other polyhydric compounds. They are used in adhesives, surface coatings and plastic laminates. Epoxy resins are resistant to chemicals and heat, and have excellent adhesion, strength and electrical properties. The curing temperatures depend upon the particular resin involved and the characteristics desired.

Emergency Procedures

1. Eyes: If splashed into eyes do not rub, flush with water for at least 15 minutes. Lift upper and lower eyelids frequently to insure complete washing. Refer to the medical department immediately.
2. Exposed Skin: Wash with plenty of soap and water.
3. Clothing: If splashed on clothing or large area of body, remove contaminated clothing and wash body under a shower for at least 10 minutes. Wash clothing before reuse.
4. Inhalation: Move to fresh air immediately any worker suffering from irritating effects, having headaches or other symptoms of overexposure. Call medical department.
5. Fire: Extinguish fires with foam or carbon dioxide. Respiratory and eye protection should be used.
6. Spills: Evacuate area and wash away with plenty of water. Protect eyes and skin.

Hazardous Properties

The hazardous properties of many of the materials used in epoxy resin systems have not been fully investigated. The degree of hazard is dependent on the materials used.

1. Health Hazard
   a. Resins:
      (1) Cured epoxy resins are stated to be nontoxic.
      (2) Uncured epoxy resins may in themselves produce skin and eye irritations. This problem decreases with increasing molecular weight of the resin. Liquid grades of resins may be more irritating than solids.
   b. Plasticizers and Diluents:
      (1) The addition of plasticizers or reactive diluents to the resins may increase their irritant properties. A partial list of plasticizers and diluents and their known toxic properties is as follows:

Dibutyl Phthalate: This material has no odor and is mildly irritating to the eyes and skin. Low fire hazard.

Methyl Isobutyl Ketone: Vapors may cause irritation of eyes, nose and throat, and inhalation may cause headache, dizziness, lack of coordination, sleepiness or unconsciousness. Irritating to the skin. Vapors are flammable.

Xylene: Vapors may cause irritation of eyes, nose and throat, and inhalation may cause headaches, dizziness, lack of coordination, sleepiness, or unconsciousness. May produce internal injury. The characteristic odor may become unnoticeable after short exposure. Irritating to the skin. Fire and explosion hazard.

Cellosolve: Vapors may cause irritation of the eyes, nose and throat, and prolonged or repeated breathing may cause internal illness. Repeated contact with the skin may cause irritation. Vapors are flammable.

Allyl Glycidyl Ether: Irritating to the eyes and skin. Moderately toxic if high vapor concentrations are inhaled or if the material is swallowed. Medium fire hazard.

Phenyl Glycidyl Ether: Irritating to the skin and eyes. Moderately toxic if high vapor concentrations are inhaled or if the material is swallowed. Medium fire hazard.

Styrene Oxide: Irritating to the skin and eyes. Moderate fire hazard.

   c. Curing Agents: (Hardeners, accelerators activators or catalysts)
      (1) In order to cure the resins they are mixed with hardeners. These hardeners may be aliphatic or aromatic amines or organic acid anhydrides.
         (a) Contact of the eyes with amines may cause eye damage.
         (b) Contact of the skin can cause irritation and/or sensitization. Amines that are soluble in organic solvents may be absorbed through the skin to produce internal illness.
         (c) Vapors may cause irritation of skin, eyes, nose and throat and/or sensitization of the skin.
         (d) Swallowing may result in internal illness.
         (e) Breathing vapors or dust may result in internal illness.
      (2) Some amine compounds which find use as curing agents are listed below:

Diethylene triamine
Hexamethylene tetramine
Diethylaminopropylamine
M-phenylene diamine
4-4′ methylene dianiline
Piperidine
Dicyandiamide

*Compiled by the Industrial Hygiene Unit, Health & Safety Section, Aerospace Division, Boeing Airplane Company. The information contained in this bulletin is accurate to the best of their knowledge; however, Boeing Airplane Co. assumes no responsibility for any use of this bulletin outside of the company's control.

(3) The organic acid anhydrides which have been used as curing agents are:

Phthalic anhydride: The dust is moderately irritating to the eyes, nose and throat. Moderate fire hazard.

Maleic anhydride: The dust or vapor is extremely irritating to the eyes, nose and throat. Moderate fire hazard.

d. Fillers increase the bulk of the plastic materials thus reducing their cost. They are usually low cost materials which may be used to reduce shrinkage; improve impact or shock resistance, increase heat resistance, provide dielectric strength and to increase resistance to fire. Silica flour, asbestos and diatomaceous earth are light, dusty materials which are capable of causing lung damage. Fiber glass and antimony trioxide may act in a similar manner.

e. Flexibilizers:

Flexibilizers impart flexibility to the final cured resin. In general, such materials are organic polysulfide materials with a foul, (mercaptan) odor. In normal use the flexibilizers are not considered hazardous.

2. Fire Hazard

a. Uncured resins are said to have flash points above 400° F. and do not present an appreciable fire hazard.

b. Some of the diluents and plasticizers have low flash points and should be considered fire hazards.

c. Most of the hardeners have fairly high flash points. If they are heated they may be fire hazards, and can produce dangerous and injurious vapors.

Precautions

1. Ventilation —

a. Provide ventilation as approved by company industrial hygiene organization:

(1) Provide a local exhaust hood for all weighing and mixing.

(2) Provide local exhaust for curing at elevated temperatures.

(3) Provide ventilation or isolation for cold curing.

(4) Provide approved ventilation for layup, pouring or spray painting of epoxy materials.

2. Personal Protection

a. Avoid breathing vapors, dusts or overspray from any of these materials.

b. Avoid contact of any of these materials with the skin or eyes.

c. Frequent washing of the hands with soap and water, clean personal clothing and general cleanliness are important factors in preventing skin irritations.

d. Never use a solvent contaminated with any of these materials for cleaning hands and tools or other pieces of equipment. The use of solvent for skin cleaning purposes should be kept to a minimum.

e. Provide a protective cream, but do not rely on protective creams to afford adequate protection. They may be used to help protect the face and arms from vapor exposure.

f. Provide the following protective equipment:

(1) Chemical type goggles and face shields.

(2) Rubber or neoprene gloves with cotton inner liner, aprons and sleeves. During mixing, layup and pouring, these items are a definite requirement.

(3) Respirators.

3. Protective Facilities

a. Provide an ample supply of available running water. This supply may include one or more of the following items:

(1) Water hose.

(2) Drinking or special eyewash fountain.

(3) Safety shower.

b. Provide convenient washing facilities. This includes both hot and cold water, towels and a skin cleaner.

c. Cover all work surfaces with paper where liquid resins or hardeners are handled. Place all contaminated paper in covered cans for disposal.

d. Flood with water any unused resin that starts to generate heat and gel or harden.

Storage

1. Resins:

Store uncured epoxy resins in any established storage area.

2. Plasticizers and Diluents:

Store in a cool, well-ventilated area away from fire hazards and possible sources of heat. Styrene oxide is highly reactive and provision should be made for venting storage vessels of this material during storage and use.

3. Curing Agents:

Store in a cool, well-ventilated area away from fire hazards and possible sources of heat.

4. Fillers:

Store in any established storage area.

5. Flexibilizers:

Store in any established storage area.

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What Happened At GAULEY BRIDGE 1930-1935?

• CAREY P. McCORD, M.D.

One of the major milestones in the development of occupational health in this country frequently is referred to as the "Gauley Bridge Disaster." As to occupational health the aftermath of that event is far more significant than the event itself. This catastrophe served as the springboard for rapid gains in all of occupational health but notably industrial hygiene. Quickly thereafter were established state and city bureaus with increasing financial support for their maintenance, although it may not be urged that Gauley Bridge was the sole influence in bringing about this expansion.

Start with a map of West Virginia. Begin with Charleston on the Kanawha River. Run a finger along that river eastward and southward to the point where the Kanawha is formed by the confluence of the New and Gauley Rivers. There is the town of Gauley Bridge, the focus of the event. Near there, about March, 1930, started a $10,000,000 tunneling project through sandstone. This was a water diversion tunnel for the Hawk's Nest hydroelectric project in New River.

It may be doubted that now or in any future time there may be assembled any faithful and unchallengeable story of Gauley Bridge. It is almost beyond belief that at a time well remembered by hundreds of physicians, there could have taken place a momentous happening leading to practically no significant facts agreed upon by any majority. At the time rumors were rife. Speculation attained to superlatives in extravagant and imprudent statements. Many official pronouncements only warranted the label of rumors. There was no consensus as to the total number of deaths after months of investigation. The number ranged from 13 to 600, and the gossip was that some death claims were settled for as little as twenty-five cents.

At this late but not remote time there is warrant for one more view but not an exploration of what may have transpired at Gauley Bridge. Without critical approach effort is made to present the two starkly different faces of the Gauley Bridge coin. One side is based upon newspaper files current to the period. These items have been selected almost at random. The other side is the report prepared from the records of the contractor.

Newspaper Stories

Gauley Bridge, W. Va., January 14 — The exact price paid in human lives for boring a mile-long tunnel through a mountain rich in valuable glass sand became a subject of the new unofficial attention in this hill country today with the statement of Congress that 476 men died of a wasting lung disease.

Representative Vito Marcantonio, Republican, of New York, in asking the House of Representatives to investigate the building of the giant Hawk's Nest tunnel on the turbulent New River, fixed that number of workers dead of silicosis — contracted by breathing dust from silica or glass sand.

Marcantonio said 1,500 persons still suffer from the wasting malady.

Several hundred suits were filed against Rinehart & Dennis, contractors, of Charlottesville, Va. After one trial a compromise was effected and Attorney F. N. Bacon, of Fayetteville, said the firm paid out about $170,000 to his clients alone.

In listing silicosis cases the State Health Department said its records showed 19 in the last 4 years; the department of mines listed 108 occupational lung disease deaths for the entire State from 1932 to 1934, inclusive, and Mrs. J. C. Dunbar, vital statistics registrar for Gauley Bridge, said she listed 6 deaths from the malady in 1932 and 1933, when most of the work was being done.

WILD SILICOSIS TALES REACH CONGRESS -- REPRESENTATIVE MARCANTONIO INTRODUCES RESOLUTION CALLING FOR INVESTIGATION OF ALLEGED SILICOSIS DEATHS, BASED ON WILD RUMORS AND PRESS ITEMS ABOUT HAWK'S NEST (W. VA.) POWER TUNNEL, WHICH ARE REFUTED BY KNOWN FACTS.

Apparently inspired by wild rumors originating in the mountain villages of West Virginia and by sensational items published in a

Chicago radical weekly newspaper, Representative Vito Marcantonio, of New York, introduced in the House on January 13 a resolution directing the Secretary of Labor to appoint a board of inquiry into facts relating to the health conditions of workers employed in the construction and maintenance of public utilities. The resolution is directed at alleged contraction of silicosis by workers on the power tunnel of the Hawk's Nest hydroelectric project on the New River in West Virginia, driven in 1930-32 for New Kanawha Power Co.

The preamble to the bill declares that 476 of the workers employed by the Rinehart & Dennis Co., of Charlottesville, Va., contractor on the project, have from time to time died of silicosis contracted on the job. It states further that 1,500 additional workers are now suffering from the disease and that 169 of those that died were buried in a field with "cornstalks their only tombstones and no means of identification." The preamble continues with a definition of silicosis and charges similar conditions exist on other public utility construction work.

In addition to the charges mentioned in the resolution, the Chicago paper has published lurid tales about alleged conditions at the tunnel. These same tales are mountain gossip in West Virginia, an indication of their source. It has been charged that dry drilling was the exclusive method used, resulting in a dusty atmosphere so thick "that a locomotive headlight could not be seen 5 feet away and that workers were unable to distinguish their associates."

One tale reports that foremen were forced to club the wrokers with pick handles to make them enter "the tunnel of death." Workmen dropped like flies within the tunnel, it is charged, several each day, choked with the deadly silica dust. The ventilation plant never worked, another report states, and the management refused to supply masks as a protection for the workers.

"VILLAGE OF LIVING DEAD" — HUNDREDS OF MINERS' LIVES REPORTED LOST FROM SILICOSIS, OCCUPATIONAL DISEASE: CONGRESS STIRRED: EMPLOYERS DENY UNFAIRNESS

A young New York playwright, driving through desolate West Virginia mountains 2 years ago, picked up a miner. From this man he heard of a "village of living dead" at Gauley Bridge, where a tunnel was drilled through the mountainside.

A visit to the village so impressed the dramatist that he wrote for the *New Masses*, radical weekly, a grim short story of a miner slowly suffocating from a strange occupational disease called silicosis.

Back in New York, Albert Maltz, the dramatist, told what he had seen to Frank Palmer, editor of the *People's Press*, a new labor tabloid. Getting names, dates and photographs, Mr. Palmer broke the story.

Last week, before a House Committee, a bespectacled social worker said that 2,000 tunnel workers labored in air so thick with fatal silica dust they could not see 10 feet ahead. Armed with affidavits and court records, she testified that 476 had died and 1,500 were doomed and that an undertaker buried the victims "at $50 a head."

The target of these accusations is the Rinehart & Dennis Co. of Charlottesville, Va., which had a contract to build the tunnel for the Electro-Metallurgical Co., a subsidiary of the Union Carbide & Carbon Corporation.

P. H. Faulconer, president of the contracting company, termed silicosis suits against his firm "a hold-up and blackmail," adding that "only 48 had died" on the job.

"Our attitude has been uncompromisingly fair," says the company. "We did everything within our power to make the working conditions of our employees free from hazard, and we saw to it that any one who died while in our employ received a decent burial, with every grave marked and recorded for future identification."

Charleston records show that 300 workers brought suit for a total of $3,000,000 damages.

Deadlocked juries led to outside settlements of $500 and $600. Last May 200 cases were thrown out by the State supreme court, which ruled the men had waited too long before filing complaints.

TO INVESTIGATE ALL PHASES OF DISEASE, SECRETARY ASSERTS

Half a hundred men were named by Secretary Perkins yesterday to work out a method for ending silicosis, a disease for which no cure has yet been found.

They will tackle the problem of prevention from four different angles: The medical, or catching the disease in incipient stages and seeking to fight it to a standstill.

Engineering control, or working out methods of equipping plants subject to silica dust so as to prevent outbreak of the disease.

The 53 men named by the Secretary to the four committees include health experts, representatives of employers, workers, insurance companies, Government, technical societies, and engineers.

DEATH TOLL ON JOB PUZZLES PROBERS — INVESTIGATORS CLAIM NUMBER WHO DIED OF SILICOSIS DEFIES COMPUTATION.

Gauley Bridge, W. Va., January 15 — Two men who have studied the building of the $10,000,000 Hawk's Nest hydroelectric tunnel were of the opinion today the actual number of men who contracted the lung disease, silicosis, on that job may never be known.

George S. Couch, counsel for Rinehart & Dennis of Charlottesville, Va., the firm which built the giant conversion tunnel through the mountains, said in Charleston:

"After the contractors paid the claims of a number of men who proved they suffered the effects of the disease, everybody in southern West Virginia seemed to have silicosis. Nobody on earth will ever know how many persons contracted it."

A subcommittee of the House of Representatives Labor Committee in Washington will hold hearings on a resolution by Representative Marcantonio, Republican, of New York, asking an investigation.

Marcantonio declared 476 men died of the wasting lung malady, caused by breathing dust of silica sand, and 1,500 others still are ill.

William S. Wysong, member of the State legislature, who had the law amended to make silicosis compensable under the workmen's compensation act, said a congressional committee will "have a hard time" finding out how many victims there were. He asserted a legislative committee was unable to do so.

Gauley Bridge, W. Va. — The 450 suits filed by workmen who said they contracted silicosis, a lung disease, while drilling through the Hawk's Nest tunnel here, were termed "hold-up and blackmail" today by the head of the contracting firm which built the tunnel.

Certain officials have charged the disease has caused the death of 476 workmen who were employed on the project.

Faulconer said "the story of these silicosis suits has been under cover long enough."

"Only 48 men died during the work here," he said; "I don't know how many had silicosis, but most of them died of pneumonia, and during the epidemic of pneumonia we had a lower death rate in our construction camps than the rest of this county (Fayette).

"We paid into the State compensation fund $166,000, but the Supreme Court of West Virginia ruled that silicosis was not covered in the provisions of the law. Since that time we have paid out over $300,000 to the silicosis racket."

He said the "records" showed that men who never had been in the tunnel brought suits against the company. Others who had been in the tube "only an hour" also were said to be among those bringing suit for damages.

The basis for most of the suits is that silicosis was contracted by breathing particles of silica sand, a large vein of which was drilled through in digging the tunnel. The lung disease has been termed incurable.

SILICOSIS INVESTIGATORS HAVE NO FUNDS

The House subcommittee investigating the silicosis tragedy at Gauley Bridge, W. Va., faced today the problem of getting direct testimony from some of the victims of the "tunnel tragedy."

The committee has no money for bringing witnesses to Washington. It has no power of subpoena. The official purpose of the hearing is to merely determine the merits of a resolution by Representative Marcantonio (R., N. Y.) proposing that the Labor Secretary be directed to appoint a board of inquiry into health conditions among public-utility workers the country over.

More than 1,000,000 Americans are exposed to silica dust, the condition which may cause silicosis, sometimes called "miners' phthisis" or "miners' consumption," according to U. S. Public Health Service estimates.

Silicosis may affect not only workers engaged in rock cutting, as in the cases reported from Gauley Bridge, W. Va., which are attracting congressional notice, but also those in the pottery, foundry, sandblasting, abrasive, granite, tool and ax grinding, glass, slate, silica grinding, and mining industries.

All of the foregoing are but random curtailed newspaper clippings of the period. None is sufficiently important to justify careful citation as to the personnel, place or date.

The Other Side of the Story

There is another side of this story. Let the contractor speak:

The facts, obtained from E. J. Perkins, of the Rinehart & Dennis Co., and by personal investigation of the tunnel project during construction, by an editor, clearly refute the charges. The visiting editor found the tunnel work being carried on according to the highest standards, well ventilated, the atmosphere remarkably clear and free from dust, and safety and accident prevention above the average for tunnel work. All drilling was with wet drills.

Ventilation was by electric-drive blowers, each having a capacity to deliver 7,000 cubic

feet of air per minute at a heading 4,500 feet from the fan. One unit was installed at each portal and at the adit. Ventilation air was conducted to the heading through 24-inch canvas tubing from each portal, through 20-inch ducts to each heading from the adit for the first 2,000 feet of heading. Another unit was installed at the adit later, and two more units were ultimately installed within the tunnel to assist in blowing the air out of the portals and adits, all operating through vent ducts. Fresh air supplied by the blowers and by the drill exhaust averaged more than 150 cubic feet per minute per man, much more than is required by State mining laws.

The first heading was turned June 19, 1930, the last section holed through September 19, 1931, and final cleanup of excavation was made June 20, 1932. In the 30 months from the start of driving to the end of 1932 a total of 65 deaths of all workmen, both outside and tunnel, occurred, 6 white and 59 colored. Causes of these deaths were: accidents (including 2 manslaughters in fights), 17; pneumonia, 35; tuberculosis, 3; heart trouble, 4; typhoid, 1; unclassified, 5. This death rate of contractor employees is less than half of the normal death rate for the county in which the work is located, listed as 12 white males and 23 colored males per 1,000 population. Of the 15 fatalities resulting from construction accidents, 11 were from underground mishaps, a remarkably low record in comparison with tunnel work in general. The accident record of the job is excellent. Medical facilities included a resident physician.

As to the charges that "169 dead lie in a field with only cornstalks for tombstones" the contractor actually buried 45 paupers and unknown men who died at or near the job. A local undertaker contracted to bury the paupers for the same price he received from the county for similar cases, $55 each. He buried 33 in one cemetery and nine in another. (3 unspecified) Each grave is marked with a wooden marker, and the name of each deceased is carried on a map on file at the undertaker's office. Some of those buried at the contractor's expense had no connection with the job, but were loafers and stragglers who happened to die in or near the camps. Clubbing the unwilling workers into the tunnel is also a fantastic charge, for the labor supply greatly exceeded the demand at all times, and if any worker had refused to enter the tunnel there would have been a dozen to take his place.

Finally, in respect to the charge that the contractor refused to supply the workmen with respirator masks, even if the tunnel had been dusty enough to require the use of masks, none was available. Respirators have been on the market for years, but it was not until October 1934 that the first mask was developed that had the approval of the U. S. Bureau of Mines as being effective against rock dusts.

From a medical source close to the harried employer, but not so close as to jeopardize objectivity, comes a coldly statistical analysis. This is introduced without any change.

Memorandum on Construction of Tunnel at Hawk's Nest, West Virginia, 1930-1931

Size of Tunnel	16,282 feet or 3.08 miles long	
	Diameter 32 feet	10,700 feet
	Diameter 42 to 46 feet	5,130 feet
	Transition sections	452 feet
Date and Time of Building	Tunneling began June 13, 1930	
	Excavation completed December, 1931	
Material Penetrated	Sandstone	9,662 feet
	Shale	4,520 feet
	Lower part shale Upper part sandstone	2,100 feet
Disposal of Material Removed	Some dumped in available space nearby.	
	Some crushed and used in concrete for tunnel lining, dam, etc.	
	About 20% of quantity suitable for use by Electro Metallurgical Company.	
	None was sold at any time for use in glass manufacturing.	

Number of Employees

The total number of men employed on this contract from the beginning of work about April 1, 1930, to December 31, 1935, was 4,887, of whom 1,690 (about one-third) were white, and 3,197 (about two-thirds) were colored.

The largest number employed at any one time was 1,203, of whom 463 were white and 740 were colored. The largest number on the payroll at any one time as tunnel workers was about 600, of whom one-fourth were white.

About 40% of the total number of employees (56% of the white employees, and 30% of the colored) never worked in the tunnel at any time. Many others worked only part of the time in the tunnel. As shown in the following table, the total of those who worked in the tunnel (total tunnel job) at any time was 2,982 (738 white and 2,244 colored).

	White	Colored	Total
(1) Men who never worked in the tunnel	952	953	1,905
(2) Men who worked both in the tunnel and outside the tunnel	359	1,129	1,488
(3) Men who worked only in the tunnel	379	1,115	1,494
Total	1,690	3,197	4,887
Total number of men who at any time worked in the tunnel (sum of groups 2 and 3)	738	2,244	2,982

Of the men who worked in the tunnel, 19% worked not more than one week; 81% worked 6 months or less; and only 19% worked more than 6 months.

Source: To a large extent those with previous

experience in tunnel work and coal mining. About half were from West Virginia. All applied for work voluntarily. None was "recruited."

Construction Methods

Drilling by new Ingersoll-Rand air drills with standard water heads. All wet drilling. All blasting at end of shift only. All rock spoil or muck thoroughly wet down before moving. Only electric shovels and locomotives used in tunnel, except for gasoline locomotives on trains of cars loaded with muck.

Ventilation

Air delivered at headings through 24-inch tubes. These delivered 7,000 cubic feet of air per minute at each heading, and fans were able to deliver that amount even at 4,000 feet from the fan. Each drill also exhausted 150 cubic feet per minute, so that a total of 8,000 cubic feet per minute was delivered, which was 40% more than required by the State mining law for non-gaseous coal mines.

Dustiness

Wet drilling and wetting down of muck before removal eliminated visible dust, so that surveyors were not hindered even in making sights of 1,000 feet and more. Visible dustiness was practically nil. (Note the U.S. Bureau of Mines did not develop tests and standards for fine silica respirators until between two and three years after completion of this tunnel. In absence of visible dust, respirators were not considered necessary at the time of this operation.)

Vital Statistics

Compiled from:

(1) Records of the contractor.

(2) Official records of the Bureau of Vital Statistics of the West Virginia State Department of Health.

(3) Records of the Workmen's Compensation Commission of West Virginia.

(4) Hospital and Undertakers' records.

These records show that, of the 4,887 men employed on the entire contract, only 109 men died in West Virginia between April 1, 1930, and December 31, 1935 (4 years after the excavation of the tunnel was completed). A summary by race and by general cause is as follows:

	White	Colored	Total
From accidents in the tunnel	3	9	12
From accidents outside the tunnel	1	4	5
From accidents or homicides not connected with the work	3	7	10
From disease	15	63	78
From unknown causes	0	4	4
Total	22	87	109

Of the 78 men known to have died from disease, 57 had worked mostly in the tunnel and 21 entirely outside the tunnel.

A comparison showed that the death rate among the contractor's white employees was much less, and among its colored employees substantially less, than the corresponding rates for white and black males over 18 years of age in Fayette County, West Virginia, during the same period, and definitely less than calculated from life expectancy tables considering such factors as age groups and race.

The records show that in the case of the 78 men shown in the table above dying from disease, distribution is as follows:

	White	Colored	Total
Typhoid	1	0	1
Pneumonia	3	32	35
Tuberculosis	3	8	11
Tuberculosis with Silicosis as Contributory Cause	0	2	2
Silicosis with Tuberculosis as Contributory Cause	0	2	2
Silicosis with Pleurisy as Contributory Cause	0	1	1
Silicosis with Heart Disease as Contributory Cause	1	0	1
Silicosis	4	9	13
Influenza	1	0	1
Venereal Diseases	1	0	1
Heart Diseases	0	5	5
All Other Diseases	1	4	5
Total Silicosis	4	9	13
Total Silicosis with Other Diseases	1	5	6
Total Other Diseases	10	49	59
Total All Diseases	15	63	78

It will be observed that pneumonia caused more deaths than any other disease. In the winter of 1931-1932 pneumonia was prevalent throughout Fayette County, and 32 of the 35 deaths from pneumonia occurred in 1931 and 1932. It is interesting to observe that the death rate from pneumonia among employees was considerably lower for the tunnel workers than for those employed outside.

Burials

Of the 109 deaths noted above, the bodies of 42 were unclaimed after reasonable search for relatives. At the request of the County, the contractor arranged with local undertakers for the burial of these 42 men. All were buried in marked graves in regular cemeteries by regular undertakers.

It is not the function or the purpose of this lock over the shoulder into history to reach any verdict. It is probable that these widely divergent figures are not reconcilable. Possibly there never was a "Gauley Bridge Disaster" in the just use of that term. The emphasis of this review is only on the aftermath. Out of the dust of Gauley Bridge sprang modern occupational health protection.

Adventures in Avocation

Marion W. Jocz, M.D., Medical Director, The Chrysler Corporation

"I'M A BETTER PHOTOGRAPHER THAN PAINTER"

The editors of the modern version of Mr. Webster's work say that "a calling away" is an archaic definition of the world "avocation." Yet, the lure of painting is just that for Marion W. Jocz, M.D., Medical Director of the Chrysler Corporation. Dr. Jocz began to concentrate seriously on his avocation just four years ago, and, although he had had no formal training in paintting prior to that time, his work has now been selected for exhibit at the Chrysler Central Engineering Arts and Crafts Exhibit, in a University of Michigan art students show, and at the Scarab Club in Detroit.

Oil portrait — "The Student"

Dr. Jocz began to paint at the age of 50, "merely because I had always wanted to paint or sketch." But he advises others not to wait for the midcentury mark: "To start something at 50 is mostly sweat." He began in oils for the simple reason that his complete lack of basic training barred him from classes in other media, but he prefers watercolor because of his tendency to be tight in line. Now, he would prefer to compromise, occupying his winters with portraits in oils, summers with watercolors, and pencil or pen and ink sketches in between.

He disclaims any art ability or talent; "Anyone can learn to draw or paint if they apply themselves hard enough; the men are separated from the boys in the business of creativity. And I'm a better photographer than painter."

The personal satisfactions derived from painting are many; and Dr. Jocz has emphasized several. His vacations are more enjoyable, since

Watercolor of the St. Louis Gate, Quebec

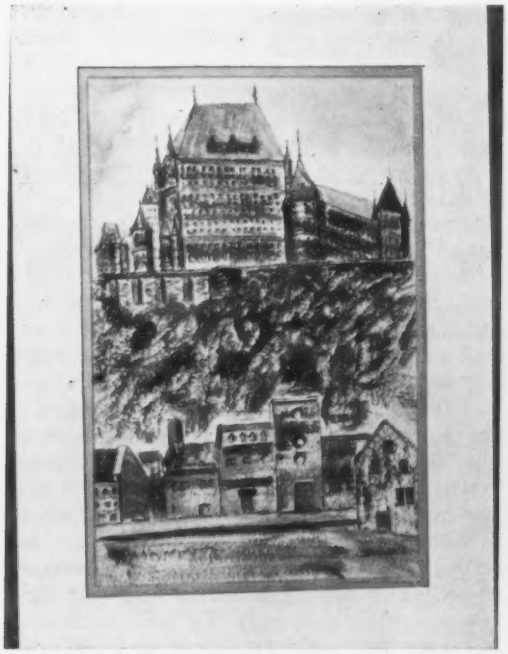
Pencil sketch of boat houses, Leland, Michigan

they are selected because of the opportunity they present for painting and study.

Painting is, for him, a complete divorcement from everyday life and worries; it is a world of its own, with its own rules and conventions and discipline. The painter must learn to mix and apply colors; he must be aware of the laws of perspective and composition. Dr. Jocz recognizes the intellectual challenge: every painting presents problems to be solved and often one must learn the mechanics of the subject in order to understand it well enough to paint it. "At Cape Ann," he reports as an example, "we were concerned mostly with sailing and we had to learn the names and functions of the various parts of the boats." And, "Shadows are not always the same color. Warm subjects have cool shadows; cool subjects have warm shadows."

Finally, Dr. Jocz sums up his experience: "My painting has made me a more devout person. I have a greater appreciation of nature, of faces; my whole perspective has been sharpened.

"The physician, in his work, sees the majesty of man and the complexity of man, and these are best expressed in creative work."



Watercolor of Chateau Frontenac, Quebec. Painted in August, 1960, and exhibited March 5, 1961, at the sixth annual Chrysler Central Engineering Arts and Crafts Exhibit.

Photograph of the Chateau Frontenac, taken by Dr. Jocz after painting the watercolor opposite. An excellent photographer, Dr. Jocz frequently photographs that which he has painted in order to display kinship between his painting and the real scene.

• ROGER G. CONANT, M.D.
Hartford, Connecticut

The USE and ABUSE of Physical Therapy

Many in the active practice of occupational medicine are perplexed by the different problems concurrent with the use of physical therapy in the treatment of pain and the limitation of disability. Most medical departments have at least one, if not three or four different modalities for rendering physical therapy. This equipment ranges from the simple hot wet packs, hydrocollator, medicolater, infra red, diathermy and whirlpool to ultrasonics. What to use, therefore, is somewhat limited by what is available for use. We realize that local heat in most instances has a comforting, if not therapeutic effect. It is also acknowledged that it must penetrate the superficial skin and fascial planes to reach the level of distress, or all physical therapy could be accomplished by the application of local skin irritants or liniments.

Each of us has our conceived notions as to what is most effective for particular injuries or complaints based on our past experience with physical therapy and what we have read in the literature. We like to have the satisfaction of doing something for suffering, or at least "doing no harm." Many of us have observed that the simple application of hot wet packs over a period of several days on one patient was more effective than six weeks of micro diathermy on another individual with an ostensibly similar injury. From such observation, we conclude that physical therapy is not the miracle cure-all for the multitude of strains and sprains that we encounter. It represents a therapeutic adjunct to the proper management of injury and distress. Its limitations must be realized and its therapeutic efficacy must be weighed against the loss of productivity of the patient undergoing treatment.

Physical Therapy

Cost to the Company: The initial cost of the equipment and subsequent maintenance charges are not a small item, if the latest whirlpool, diathermy and ultrasonic equipment is installed. Our company started with diathermy in 1954, added whirlpool in 1955, hydrocollator in 1956, and an ultrasonic vibrator in 1958. In 1959, it was necessary to make a major overhaul and repair of the diathermy. The total cost for a single unit of each and appropriate tables and chairs for the above modalities was about $2,000.

The cost of equipment is relatively minor in relation to the general over-all cost to productivity. If the 1957 figure of 6,731 treatments, (see table) for a plant averaging 5,871 employees is multiplied by an average hourly wage of $1.75 times 30 minutes per treatment, it represents lost productivity of approximately $12,000. This figure totally disregards the cost of training replacements, having them available on standby basis, the inherent delay in change-over, traveling time to and from medical departments and time lost looking for a supervisor for a pass.

	Patients	Treatments	Average Number of Treatments Per Patient
1954—Diathermy	71	349	4.9
1955—Diathermy, Whirlpool, 1 month	467	2947	6.3
1956—Diathermy, Whirlpool, Hydrocollator	896	5459	6.1
1957—Diathermy, Whirlpool, Hydrocollator	1230	6731	5.4
1958—Diathermy, Whirlpool, Hydrocollator, Ultrasonic*	1062	3285	3.1
1959—Diathermy, Whirlpool, Hydrocollator, Ultrasonic	1071	2721	2.5

*Ultrasonic treatments, 5 minutes. Others 20 minutes duration.

If management is cost conscious, they are soon aware of this drain on human resources and a medical director should be asked to control or justify this expense. In late 1957, soon after appointment as Medical Director, the author composed his first annual report of the activities of the medical department. At this time it was obvious that physical therapy was a controllable item that needed close scrutiny. Immediate steps were taken to exercise closer surveillance over physical therapy and the subsequent results were noted in the statistics of the following year when the 6,731 treatments in 1957 were reduced to 3,285 in 1958. The average number of treatments per patient declined from 5.4 in 1957 to 3.1 in 1958, and still further to 2.5 treatments per patient in 1959. If this tightening of control can be accomplished without sacrificing good medical practices, it represents a considerable saving of direct labor costs.

Dr. Conant is Medical Director of the Royal McBee Corporation, Hartford, Connecticut.

Value to the Company: The availability of physical therapy in the medical department can be of great value in many respects when it is wisely utilized. The dynamic cost-cutting management representative would be the first to admit that the days following an auto injury or weekend of snow shoveling or gardening were made more comfortable by his daily visits to the medical department and the relief of muscle spasm and pain afforded him by the application of heat to his "aching back." He will also concede that there were days when he would have stayed in bed or gone home early, if it hadn't been for his plant treatments. He is also the first to note that these treatments are quite relaxing and a welcome relief from the daily industrial battle. It is wise therefore, to shorten, rather than prolong his treatment period, as he will think that we abet or condone "goldbricking," in spite of the secondary benefits afforded him by a few minutes of relaxation.

The use of physical therapy following occupationally incurred injuries is a medical as well as legal necessity. If distress or discomfort is taken lightly by the attending physician, the patient cannot be blamed for going elsewhere, where he will certainly receive physical therapy to his "heart's content." The cost of treatment away from the place of work is well recognized as being an excess cost. It is even more costly when an employee goes out for physical therapy several hours a day at $5 or $10 a visit, when the in-plant cost is negligible. When the plant physician administers the treatments, he is able to judge improvement by observation of work performance, as well as by the admission of the patient. The conditioning and actual process of weaning can be initiated early and need not originate from the patient. A close contact with the job situation will spot personal animosities and dissatisfactions that too often delay effective early rehabilitation.

Physical therapy for nonoccupationally incurred injuries or complaints requires considerable thought and wisdom. Its advantages must be weighed against its disadvantages. If it is an adjunct in the process of early return to work and rehabilitation, it is worthwhile. If it enables the individual to be productive when he might otherwise be nonproductive by remaining at home, it has merit. The cost of outside physical therapy is charged against a company's group insurance experience, and utilization of existing facilities in a medical department is not. It is usually acceptable to honor the bonafide request of the attending physician that his patient be treated at the medical department facilities for a reasonable period of time. Nothing but grief befalls the plant physician when he has been subpoenaed to testify at an automobile liability litigation to prolonged disability as evidenced by long periods of physical therapy under his management. Some attending physicians do not appreciate another physician's unsolicited help in caring for their patients, particularly when there is economic competition.

An individual working with a nagging muscular or ligamentous pain is performing no more efficiently than any other sick person. If he is distracted by his misery, both the quantity and quality of his production suffers along with him. In such cases it is both humane and good business to give him the palliative treatment that will improve his sense of physical well being as well as his morale. He will go back to work somewhat improved with the understanding that he is to visit his own doctor after work for a definitive diagnosis and written instructions regarding further physical therapy.

Some apparently nonoccupational conditions can be treated if the employee insists that the work he is doing either causes or aggravates the condition. If treatment is denied and he seeks treatment elsewhere, he will have no difficulty in convincing his attending physician that the condition is occupationally incurred. Once such a position is assumed, it must be maintained and the matter is later only resolved at a Workmen's Compensation hearing. If the plant physician feels that this apparently nonoccupational condition will eventually result in lost time and extensive medical therapy, he should maintain the nonoccupational position at the onset. If he temporizes, he will later find that by so doing, he has tacitly admitted occupational origin of the condition. The plant physician has the good fortune of being in a unique position of observation. He should obtain his information by firsthand knowledge or observation of the job in question, rather than accept the patient's statements at full face value, as the family physician is unfortunately forced to do.

Value to the Employee: Following an injury, the normal mentally healthy individual wants primarily relief from pain and secondly, restoration of normal activity to the injured part. He seeks help in these pursuits, particularly if he knows that he is entitled to them without additional personal expense. Great suffering is stoically born in many instances where the injury is not work connected and treatment represents a dent in the already pinched pocketbook. We see individuals working with minimum complaints when they have sustained fractures or severe lacerations to their extremities while working around the home or during recreation.

The injured looks to us for immediate attention, when he is injured on the job. He expects

anodynes for pain and splints for fractures. He wants continued attention until he is convinced that the injury no longer represents a threat to his economic security. During the healing phases of his injury, he demands something be done. Physical therapy represents the panacea for his troubles. It is unlike the pills which work in a deep mysterious, unobserved manner. The water in the whirlpool can be watched; its warmth and soothing titillations can be felt. Muscle spasms relax and the arthritic joints unlimber. Few patients deny its therapeutic effect. The warmth and comfort of the hydrocollator pads relieve muscle spasm. Diathermy penetrates deeply with the same comforting effects. The ultrasonic vibrator is often misinterpreted as being a method of massage utilizing the applicator head. This in itself has value but it may be further enhanced if the patient is educated in the wonders of ultrasonics. Certainly those modalities that can be appreciated by seeing, feeling, and understanding are more effective than voodoo to the thinking man.

Unfortunately, uncontrolled physical therapy can be a malingerer's haven. Far from the maddening crowd, epitomized by foreman, supervisor, set up man, union steward and fellow employee, the malingerer can revel in the ecstatic pleasures to the flesh. White vested maidens and the great healer are by his side to minister to his every whim. He is a very difficult man to uncover, but he eventually gives himself away by more than a smile, as he describes his great pain. This man establishes a pattern of conduct that fools no one, if time permits observation of his antics.

Value to the Doctor: Physical therapy is representative of the art of practicing medicine. Alone, injudiciously or thoughtlessly administered, it is worthless to the doctor and useless to the patient. It would benefit all doctors ordering its modalities to know the scientific rationale and therapeutic principles of its application. It can not be used in lieu of a diagnosis or when one does not know where else to turn and is awaiting Mother Nature's time "healing of all wounds." It must be explained to the patient that physical therapy does not heal, but merely assists the healing processes that relieve pain and restore function. A philosophical, humorous approach to the patient is often more effective than to damn him for not responding to the supposed miraculous healing powers of this expensive shiny stainless steel equipment. If healing does not progress at its anticipated rate, we must turn to ourselves for a better evaluation of the patient, missed diagnosis, or possibly signs of impatience on our part.

The Control of Physical Therapy

The controls over physical therapy can be briefly reviewed. Its modalities should not be prescribed except by a physician after a diagnosis has been tentatively established. Standing orders for certain situations and conditions may be given to nurses for therapy such as whirlpool or hot packs. Diathermy or ultrasonics are potentially dangerous, if improperly prescribed. If a nurse does render hot packs or whirlpool, the patient must be seen as soon as possible by a physician. Most of us still feel that cryotherapy is indicated as the immediate therapy for a wide variety of traumatic injuries.

Therapy with the physical modalities should not be ordered for an indefinite period. Three treatments or less before re-examination should be a maximum. By the end of this time, it should be obvious whether the therapy is going to be effective. The use of corticosteroids and muscle relaxants, after or in conjunction with anodynes will often hasten recovery and lessen the period of necessary physical therapy. The salicylates are unequalled in effectiveness when used in conjunction with physical therapy in the early relief of pain and restoration of function. Daily physical therapy should not become firmly established as the pattern of living. It may be necessary in the early period of injury to use it frequently, but the period between treatments should be lengthened as soon as efficacious. Early muscle and ligamentous stretching and strengthening exercise should be started as soon as they do not cause painful recurrence of symptoms.

Finally, a moment of truth must be approached when the patient will admit that his treatments are no longer necessary to keep him working. A "cold turkey" attempt to stop treatments is often attended by a violent exacerbation of all previous symptoms often termed a relapse. Such relapses will not often occur, if the transition has been "greased" by mental and physical conditioning. Even the frailest female does not want so many heat treatments that she will become soft and "flabby."

Summary

The inherent problems of physical therapy in an industrial organization are introduced and discussed. The pitfalls encountered in the uses and abuses of physical therapy are enumerated. Physical therapy has a vital place in the art and practice of occupational medicine. Its thoughtful and judicious use will yield great benefits to the doctor and medical department in the treatment of pain, restoration of normal body functions, and in the over-all organizational morale.

- DANELY SLAUGHTER, M.D.
- SAMUEL TAYLOR, M.D.
- FRANK HENDRICKSON, M.D.
- OLIVER RENAUD, M.D.

The Panel entitled "Cancer — New Developments in Treatment," of the Seventy-Second Annual Meeting of the American Association of Railway Surgeons was convened in Chicago on April 8, 1960, with Danely Slaughter, M.D., University of Illinois Hospitals, Chicago, acting as moderator of the panel.

Members of the panel were: Samuel Taylor, M.D., Associate Professor of Medicine, University of Illinois; Frank Hendrickson, M.D., Chicago, Illinois, who is on the staff of Presbyterian and St. Luke's and Veterans Administration; Oliver Renaud, M.D., Chicago, Illinois, Instructor in the Department of Surgery, Tumor Clinic, University of Illinois College of Medicine.

Cancer — New Developments in Treatment

Moderator Slaughter: It may seem to many of us that there have not been important advances in the management of cancer in recent years, but I assure you that there have been.

In surgery, for some years, advances consisted of cutting an inch wider and an inch deeper each year until sometimes we were through into the mattress without any apparent higher cure rate. I think that the keynote here has been individualization, precision surgery, rather than simply extended radical dismemberment of people. I think we are returning a bit from that aspect of surgical management, although we were able to do this radical surgery because the ancillary sciences, perfection of antibiotics and anesthesia, have allowed us to do things to people that we could not do before.

Some of the changes in surgery that have come up have been due to new research. We have found that we as surgeons may spread cancer during surgery. Some of the findings during the last couple of years have been the demonstration of circulation of cancer cells in the blood stream. It is a fact that during surgical procedures with rough manipulation, for example, removal of carcinoma of the ovary and/or colon, we can find, by repeated blood samples taken from a vein in the arm, that there are cancer cells circulating in this system. We also find that when a tumor is removed they cease. This has been demonstrated with such regularity that there is no question about it.

This, then, brings up many facets for our consideration. First of all, it is changing many of our concepts of circulation. Cells from cancer of the colon can go through the portal system, be filtered through the liver, through the hepatic vein, be filtered through the lung, through the left ventricle of the heart, and the extremities, and then come back and be picked up in the cubital vein. This can be demonstrated with regularity, gentlemen, and, further, it means a number of things.

First of all, the word that I mentioned before, precision in surgery, is of extreme importance.

Ligation of the venous drainage of the tumor area before it is touched is important.

I should like to start out in the anatomic area of the head and neck and ask Dr. Renaud to discuss what is new in the surgical management of cancer in the head and neck — what improvements have been made.

Dr. Renaud: The neck was the area in which some tumors were considered not operable because it meant sacrifice of the carotid artery, carrying an extremely high mortality. It has been recognized, certainly within the past 10 years, that one can, with a fair degree of regularity, salvage some of these people, with a low morbidity. When I say that, I mean a formidable mor-

bidity but a mortality that was lower than previously contemplated — that one can essentially sacrifice the carotid artery.

When I speak of the carotid artery, I am talking about the effects of sacrificing the internal carotid artery, without sacrificing the patient. It used to be that the mortality of sacrificing the carotid artery carried a 50% mortality. However, now, with the use of blood banks and antibiotics, replacing blood loss before ligating in connection with the carotid artery has reduced mortality to about 13%.

Morbidity is high, however. It is 33% but this, I feel, is certainly an additional approach to the problem of tumors arising in the head and neck area, which have previously been considered inoperable and nonresectable.

Moderator Slaughter: Dr. Renaud, you are talking about very advanced disease here. However, about 95% of cancer of the head and neck is squamous cell types and this implies two facts which are of importance to the clinician.

The first is that squamous cell cancer does not usually disseminate by the blood stream; it goes through the lymphatics, and it remains largely a local and regional problem. We don't have with it as much a problem of pulmonary, liver, brain and spinal metastasis as we do with other carcinomas.

The second fact is that the carcinoma of this type does just one thing — it just keeps on growing. These carcinomas are, at least as far as we can ascertain, not under any endocrine control, such as breast and prostatic cancer, and perhaps some others that may remain dormant for years in the body until released by some endocrine change.

These tumors, however, just get worse, and what Dr. Renaud is saying is that by the more radical techniques, such as removal of the jaw and parts of the tongue when necessary, we will salvage individuals who could not be salvaged previously. He pointed out that we can now, to some degree of achievement, tackle any carotid artery.

I would like to ask if you mean by that merely ligation, or do you contemplate grafting?

Dr. Renaud: I am suggesting the complete sacrifice of it without making any attempt to replace the continuity by means of a graft. Of course, I am aware that some people do advocate that. Those that I have ligated or sacrificed, I have not replaced with a graft. I have not had a mortality from it and the series I am referring to had a mortality of 13%.

Moderator Slaughter: Thirteen percent. The morbidity was 33% but, prior to this time, the figure that had always been quoted was 50% mortality.

Now then, you are talking about advanced cancer of the head and neck and so let's now see what Dr. Hendrickson has to say about it. What is new and different in radiation today?

Dr. Hendrickson: There are many new pieces of equipment now on the market for treating people with malignant disease. These really offer little in increased cure. They offer considerable in increased tolerance of patients.

I think it is rather evident, however, that the head and neck is a structure in which the tumors are usually accessible relatively superficially and delivery of ionizing radiation into almost any part is relatively easily accomplished.

The newer modalities of doing it are multiple. There are new types of interstitial implants that you read about in the literature almost daily. These offer nothing that radiology has not offered before.

There are higher energy units for delivering a dose and sparing patients some of their skin. Our salvage rate is not going to increase greatly merely because of higher energy. I think that Dr. Slaughter was alluding to this when he said "extending the operative procedures" is not apt to cure many more patients.

What we basically need is a method of influencing the biologic activity of the tumor cells. We can destroy any part of the body we wish these days with radiation, normal tissue and malignant tissue together, and we are all looking to Dr. Taylor's comments and other comments in the years to come on ways of improving the relationship between responsive tumors and retention of the normal tissues.

Moderator Slaughter: You made an important statement, Dr. Hendrickson, that caught my ear. You said that many of the new modalities do not offer anything that radium hasn't had for many, many years. Can you expand on that a little bit?

Dr. Hendrickson: Yes. Radiation is a curative means of treating squamous cell carcinomas in the tongue. The Manchester group reports a 52%, five-year survival stage of what they call early lesions. These are lesions of less than five centimeters in diameter. This is a very respectable salvage, quite comparable to surgical treatment of the same disease. Of course, this implies some degree of competence in administration of radiation, just as surgical treatment implies the same degree of competence.

Large exophytic lesions likewise have a high curability. Therefore, interstitial and/or external therapy, mainly interstitial therapy, within the mouth, has, for a long time, been a curative procedure for many carcinomas.

Moderator Slaughter: I assume that in carcinoma of the lateral border of the tongue that you would prefer to use your method?

Dr. Hendrickson: I rather imagine that you could. However, I think if you move it a little further forward and put it on the tip of the tongue, I would not argue that surgery would be the treatment of choice for such a lesion. It is much easier to excise the tip of the tongue. The degree of dysfunction of the tongue is relatively less. The further you go back along the border of the tongue toward the posterior third, into the middle third, the greater the deformity and dysfunction that is incurred. Therefore, as you move the lesion back, I am more and more interested in putting radium needles in it, not because we cure more or because we make it more comfortable for the patients — we make it much more uncomfortable to treat with radium. The morbidity of acute reaction is greater, but the beneficial results that would be achieved years later is superior to the surgery that would be involved. I am sure that we will have an argument here.

Further, of course, you have a much wider margin if you have a lesion on the anterior third of the tongue than if you have one at the base of the tongue because, when you get down to the base of the tongue, you have a different problem.

However, the morbidity from ionizing radiation is not nil and it has not been suggested that there was no morbidity with it and, of course, I am certainly not suggesting that there is no morbidity associated with surgery.

I have talked to a patient who had a neck dissection for carcinoma of the nasal pharynx. This particular patient had metastatic disease to the neck and had a neck dissection done. He was primarily treated with ionizing radiation, and when he developed nodes on his opposite neck, his remark was that he hoped that he would be treated surgically because, in his experience, the x-ray and radium therapy which he received was much more disabling to him than the surgical program.

Also, you must remember that the results in connection with surgery — the deformity, scarring, is permanent. Those with ionizing radiation, of course, are permanent, but there is also a progressive change involved.

The other advantage is that when you take it out, the pathologist can tell you that you have the margins clear. The radiotherapist, of course, doesn't have the surgical specimen for the pathologist to indicate whether he has encompassed the disease.

Moderator Slaughter: Dr. Taylor, what are your concepts of the use of chemotherapy in any of the head or neck tumors?

Dr. Taylor: From the point of view now of the endocrine situation in connection with head and neck tumors, there is only one tumor for which we have any definite evidence that we can produce palliation and here, of course, it would be palliation only. That is in papillary carcinoma of the thyroid, by the use of desiccated thyroid.

The dose of desiccated thyroid should be around five grains, which is a thyrotoxic dose but sufficient to suppress the pituitary, which is the mechanism by which this works. In children, of course, the dose could be somewhat less — about equivalent to two and one half grains.

Moderator Slaughter: This really works, gentlemen. I have seen the lungs of children clouded with papillary carcinoma cleared completely for long periods of time. I don't know how long it is going to last but the mechanism is suppression of thyroid stimulating hormone, or TSH, from the pituitary, which apparently causes the papillary carcinoma to stop growing even to a clinical disappearance for some time. How long, I do not know, but I don't think it will be curative.

I think we had perhaps now better progress to breast cancer. There have been a number of arguments about the management of cancer of the breast in recent years and considerable spirited argument about both aspects.

I think we will take it up again in the same order: surgery, radiation, and endocrine.

Dr. Renaud, what is new or different, if anything, in the surgical management of mammary cancer as we see it today?

Dr. Renaud: In 1951, Urban at New York City embarked upon a program of doing internal mammary node resections in conjunction with radical mastectomy and replacing the defective chest wall with fresh tissue taken from the thigh.

In an analysis of about 270 cases, it was found that 96 cases of this series or 35.5% did have positive internal mammary node involvement and, of course, if these 96 cases had had just a straight radical mastectomy, there would have been unknown disease left behind. However, since the patients had internal mammary chain resections, in this series there was no known disease left behind and this procedure of internal mammary chain resection can be done with a mortality no higher than a straight radical mastectomy.

Morbidity is higher. Patient hospital stay, instead of being five or six days, is eight or nine days. The graft is taken prior to starting the radical mastectomy.

Moderator Slaughter: I think that what Dr. Renaud is saying is that the so-called super radical surgery of breast cancer, including the full neck dissection, has been given up as a bad job. A breast cancer which is extended that far is too far advanced for surgical cure. I do think, however, that there will be near a 10% increment in our salvage rates from those indi-

viduals who have a relatively early medial or central quadrant lesion, when internal mammary node dissection is done.

Radiation has been a somewhat controversial point in management of mammary cancer. I should like to ask Dr. Hendrickson what he thinks is the place of radiation in treatment of breast cancer.

Dr. Hendrickson: Radiation's main function in treatment of breast cancer is a palliative one. Certainly the relief of bone pain, the suppression or local cure of cutaneous inplants is very, very high and of all the things I treat, I think the relief of bone pain from cancer is as near a 100% proposition as any other disease.

The place of radiation in routine treatment of primary operable patients is certainly a controversial one. I had the privilege of spending some time with a fellow in Scotland who has different ideas, I think, from many of us. However, I am sure that he has the right idea. I think he has an interesting experiment under way and, certainly, the results will have to be looked at by an open mind. But I think that I, and most of us in this country, will continue to perform radical mastectomies on primary operable patients.

If one looks at his statistics closely, I think the most interesting fact is that the late stage two's and early stage three patients do have a much better chance with less surgery and more radiation than they do with more surgery and less radiation.

One other thing that he has pointed out is that just as removal of only a portion of the tumor is not a curative procedure, likewise treating potential tumor bearing area to only a portion of the dose necessary to destroy tumor cells is not going to be a curative procedure. Certainly, in the statistics that one can read, you can find that radiation therapy helps greatly.

However, unless such statistics have some related factor to the dose delivered to tumor cells, it is very hard to evaluate what they mean.

In our patients we are continually or currently attempting to deliver a minimum of 4,000 roentgens to potential tumor bearing area in a period of four weeks, with 200 KV machinery. Of course, this brings forth a reaction to the skin. However, I feel this is a necessary evil.

I don't think anyone knows to date whether this helps or not. It may be that one's lymph nodes are involved — that the cat is already out of the bag. This is something we can only speculate upon.

Our third policy is a radical mastectomy followed by radiotherapy to the internal mammary nodes if the axillary nodes are demonstrably involved with the tumor or if the lesion happens to be in the medial quadrant.

We do not treat the chest wall. I think that the skin, perhaps, is at times too thin to tolerate therapy and our chest wall returns are something in the neighborhood of 10%. However, I don't believe that warrants treating nine people for nothing.

Moderator Slaughter: We have been talking largely about the patients with considerable breast cancer.

In spite of some very fine figures from certain centers that have a great interest in this and who find patients early, the actual fact remains that our therapeutic problem in most individuals with breast cancer is a palliative one. We do not cure over the country as a whole anywhere near the 59% that is reported. This isn't what happens to people with breast cancer. Therefore, palliation is important. It is the bulk of our work.

There are two aspects of this that I should like Dr. Taylor to talk about. One is that if we can get the patients earlier we will cure more of them with radical mastectomy. The second is what can we do, what is available aside from radiation, for the treatment of a patient who becomes a problem in connection with recurrent mammary cancer?

Dr. Taylor: Despite the fact that there are various means of effective palliation in breast cancer, I still feel that the best treatment for breast cancer is early diagnosis and early attempts at definitive therapy. This is not my line but I am just getting a little business up for you surgeons.

One of my pet peeves has been that the general practitioner and the internist are the first ones who see patients for general physical examinations. They are not interested in examining the breasts. They consider them appendages to push out of the way to listen to a grade two systolic murmur that one can be very enthusiastic about.

I pray that the general practitioner and the internist will pay more attention to this, rather than being more interested in the grade two systolic murmur itself.

The American Cancer Society has a pamphlet out — "A Way to Examine the Female Breast." This hasn't gone over very well because it doesn't seem that the pictures are attractive enough. I brought for you here today a picture showing the examination of the female breast which demonstrates the importance of raising the arms in the examination.

Now, from the point of view of the 60% of patients or more who eventually come to the point of disseminated disease, there are certain facets that have been gone over a great deal that you are acquainted with. However, I would like merely to summarize them and some recent reevaluation of data on the use of adequate therapy.

The two first forms of additive therapy that were used and are in use generally are the estrogens and/or androgens.

Two points here are very important to bring out. One is, that when additive therapy is given, it should be given in adequate doses. Everybody knows that you can give androgens for breast cancer but it is given in a most peculiar way — a shot a week — a shot every two weeks — a shot a month.

If you are going to use testosterone, use 100 milligrams of it three times a week if you are after therapy. However, don't expect anything to show up from the point of view of regression in less than from four to eight weeks. If there is no evidence of regression during this period of time, the drug shuld be continued for a minimum of three months before you can demonstrate whether or not the drug is of value.

The effectiveness of testosterone increases with age. The younger the individual, the less effective is the drug. After the age of 60, testosterone is much more effective than it is at the age of 40. Only about 13% of the patients in the age 40 to 50 group will show a regression with testosterone.

Moderator Slaughter: I am going to get out here and argue a little bit. Isn't it more dangerous after 60 in the older individual with a latent cardiac problem?

Dr. Taylor: There are two dangers in giving it in the older age group. One of them is that it is a sodium retainer and it is important not to have patients going into congestive failure. This can be controlled by the use of Diuril or the use of low sodium diet, by watching carefully the cardiac stages of the patient.

Of course, the second danger is the danger to the husband, because of the patient's increased libido.

Moderator Slaughter: How about the estrogens?

Dr. Taylor: There is one other point that I would like to bring up in connection with the androgens and that is there are many new derivatives of testosterone that are now available that do not produce the unfortunate side effects that testosterone does. The effectiveness of these drugs has not been worked out despite the advertisements of the pharmaceutical houses to date.

As far as the estrogens are concerned, they are effective in a high percentage of patients with disseminated breast cancer four years or more after the menopause. We have no information that it produces any regression and may produce a progression in patients before the menopause.

The older the age group, up to about 60 where there is a plateau, the more effective is the drug in the control of metastatic breast cancer.

Only in a period of from five to eight years after the menopause is estrogen superior to androgen. They are about comparable throughout the rest of the periods. There is no significant difference between the series from zero to four years after menopause.

There is another group of drugs that is used in the palliation of breast cancer — the corticosteroids. In a well controlled series, the use of corticosteroids in patients who are postmenopausal brought about a 10% regression rate. On the other hand, palliation can be enormous — palliation from the point of view of control of edema, from the point of view of pulmonary metastasis — by reduction of the inflammatory action, by decrease in size of lesions, especially the painful lesion — not from the point of view of tumor regression but of the inflammatory reaction of the body to the tumor.

This can be good or bad. There is a good deal of evidence, experimentally, that the corticosteroids will block the immune reaction of the individual to the tumor and I have seen several cases where I have wondered, despite the fact that the patient was better clinically, if we were not spreading the tumor more with the corticosteroids.

These drugs, especially prednisone and prednisolone, help with two specific complications of breast cancer. One of them is hyper-calcemia, which occurs in 15 to 20% of patients.

How this happens we do not at all understand but, as a specific drug for control, it has to be given in large doses, around 100 milligrams or its equivalent a day in acute stages of hypercalcemia.

The other is in the cerebral metastasis. All neurological symptoms of cerebral metastasis very frequently disappear with the use of from 50 to 100 milligrams of this drug. Further, relief lasts anywhere from a month to a couple of years.

On the other hand, we don't see any definite evidence of tumor regression. Apparently it cuts down the inflammatory reaction as well as the pressure symptoms that control.

There are two or three modalities for the control of cancer of the breast.

The first is the surgical castration or radiation castration. This will produce regression in a premenopausal woman. In Chicago it helps only 20%. However, in New York, where the ovaries are much more active, it apparently produces regression in 40%.

My suggestion in connection with which of the two major procedures to be done is if you have a neurosurgeon who is an expert at taking

out the pituitary gland and likes to do it and is even happy about doing it, that is fine. However, if you are a surgeon who likes to take out the adrenals, why, then do that.

Further, you can take the ovaries out first or in conjunction. It makes no difference from the point of view of survival whether they are taken out together or separately.

Moderator Slaughter: Dr. Hendrickson, Dr. Taylor has just talked about the systemic approach to this. What is your point of view in connection with radiation palliation of recurrent mammary cancer — where is it useful?

Dr. Hendrickson: Local symptoms are easily palliated with local radiation therapy. I think that many of the patients that Dr. Taylor sees we see with him or either before or after he does.

In general, if a patient's symptoms are localized to a few areas — two or three, particularly when there is bone pain in these areas, these can be palliated both quickly and with little discomfort to the patient. Usually pain relief begins to make itself evident within a week or even before that and recalcification of the lesions, healing of the bone is a common thing to see.

Dosage here, for some strange reason, has to be much less than it takes to control breast cancer when it is in soft tissue. A dose delivered to the bone, of one thousand five hundred, two thousand r at the most, is usually all that is necessary to give the desired palliation. When symptoms are more generalized, more areas involved, then I think that we have to rely on Dr. Taylor to give us the benefits.

Dr. Taylor: I might say that our best results from the individual procedure are in the group of patients with disseminated bone disease.

Moderator Slaughter: I think that is very important. Dr. Taylor has pointed out that the regression rate of an adrenalectomy is 33% and the regression rate in bone disease with radiation is at least 90 to 95%. To allow a woman with femoral neck metastasis to go through an adrenalectomy in order to wait and see if it is going to work is malpractice. She can be radiated and the waiting period eliminated because that will recalcify in a few weeks. I would predict that they will recalcify in 95% of the cases and so we must not allow those people to go into the jeopardy of a fracture as long as we are trying to help them.

I would like to cover something in connection with pelvic cancer. The points of view of management of cancer of the pelvis is something that I would now like to take up and by that I would include the cervix, etc. Is this situation in a state of flux?

Dr. Renaud: Stage one certainly is confined to the cervix. I can tell you the concepts with regard to surgical approach that I have on it. Of course, I know that there is a great deal of controversy.

Moderator Slaughter: What surgical approach do you recommend?

Dr. Renaud: A hysterectomy and pelvic lymph node dissection and a partial vaginectomy along with that. The reason for it and the figures I would like to quote are referring to those of Meigs of Boston. He found that 20% of those cases that would have been classified as stage one — 20% of them have positive lymph nodes in the pelvis.

Moderator Slaughter: How about the advanced radiation recurrent? I should like to make a distinction in your mind between radiation therapy of cancer of cervix as usually given in this country and radiation therapy by experts such as Dr. Hendrickson. Of course, this is no free plug for him. He is an expert and there is a world of difference between the man out in South Fork who, because of a smear test, says that he has a positive biopsy, and the way that Dr. Hendrickson operates.

I believe that your figures in stage one, with expert radiotherapy, are exactly comparable to surgery, are they not?

Dr. Hendrickson: The last five-year report had a 90% five-year survival in stage one from 93 patients from radium. I certainly agree with what Dr. Slaughter had to say, but then I think that the same thing holds true for the type of surgery that is contemplated. The average surgeon who does a few hernias, appendectomies and an occasional gall bladder is not used to this type of surgery for carcinoma of the cervix.

Moderator Slaughter: How about the advanced, the recurrent? We talked glibly about the 80 or 90% — 60% five-year cures. However, this isn't what happens to people with cancer in this country. The big problem is palliation or attempting to salvage or cure the far advanced patient with cancer of the cervix, either treated or recurrent after radiation or surgery.

Dr. Renaud, what can you do about him?

Dr. Renaud: These patients fall into a 100% hopeless category. However, in connection with the method of managing other than pelvic exenteration, when that was first carried out, it was done purely for relief of pain. Dr. Brunschwig mentioned to me one day he did not expect any of the people to live over one year. Most of them are dead within a year's time. It carries a high mortality.

However, the published figure that I am familiar with was 13% in a five-year salvage in these people who had a pelvic exenteration. Of course, these people are continuously in pain

and many of them would welcome death. However, the Lord isn't kind enough to them to give them that. Therefore, near the end, they are willing to have almost anything done.

Moderator Slaughter: The total pelvic exenteration is what I call a "post hole digging" operation. I think it could be done with a post hole digger. It is a rough operation to contemplate.

I think the tendency at the moment is to modify that, to do a partial pelvic operation. We have done some procedures such as total hysterectomy, a vaginectomy, removal of half of the bladder, end to end anastomosis, etc. We come out with a much better functional unit as a human being than we can achieve by taking the post hole digger and removing the whole works.

That it is a feasible procedure and that it will salvage some is established. At a meeting in April, 1960, in White Sulphur Springs, Dr. Bricker of St. Louis reported on some 270 cases over a 10-year period, in which he did not cut across the tumor grossly. He had a 31% five-year survival.

Dr. Brunschwig discussed it. His cases are much less selected and, of course, that is no criticism of either surgeon. Somebody has to do these things in order to find out. However, his five-year survival figures comprised considerable number, 680 cases or something like that, and it was a little over 19% of five-year survival free of disease. This was with reference to patients who had advanced and ordinarily hopeless pelvic cancer.

Those figures cannot be ignored. I don't think any of us is trying this sort of thing. However, we should, whenever possible, attempt to do a partial operation, try to reconstruct the individual rather than just go whole hog taking out everything, unless it is absolutely necessary.

Dr. Hendrickson, what can you do with radiation in the stage three or four cervix — post-radiation recurrent cervix lesion?

Dr. Hendrickson: I think that most people report, in the stage three carcinoma cervix, a survival rate somewhere in the neighborhood of 25 to 30%. This depends a little bit on the staging, on what kind of stage three you happen to have. Stage four, if treated with radiation probably should be treated almost exclusively with external radiation. There is very little need to put a lot of radiation into a cervix where its lateral pelvic wall is already filled with disease.

Suicide in the United States

About, 18,000 persons die by their own hand in the United States each year, it is reported by statisticians of Metropolitan Life Insurance Company. This is at least twice the toll in homicides, and about 12 times the loss of life in all types of aircraft accidents. Suicide ranks eleventh among the causes of death; among white males, who account for about three fourths of all self-inflicted deaths in the country, suicide ranks eighth.

The relative frequency of suicide in the United States is appreciably higher than in Canada, the rates in 1958 being 10.7 and 7.5 per 100,000, respectively, and is several times that in Ireland, Greece, or a number of Latin American countries. On the other hand, our suicide rate is no more than half that recorded in Austria, Hungary, West Germany, or Japan.

Spring is the most common season for suicide, and April the month of greatest frequency. Suicides are fewest in December. Methods vary in frequency according to sex, the Metropolitan statisticians point out. White males tend toward firearms, somewhat over half choosing this method. Hanging and poisoning each accounted for nearly one fifth of the suicides among the males. Among white females, poisoning outranked the other methods, being responsible for more than one third of the suicides. Firearms accounted for one fourth and hanging for about one fifth of the lives lost among females by self-destruction.

Fees for Attorneys in Workmen's Compensation

In the initial planning of workmen's compensation laws it was not contemplated that any necessity would arise with any high frequency that claimants would present their cases through attorneys. In modern practice it has developed that litigation frequently is involved and attorneys do appear representing either the claimant or industrial management. This has developed to the point that one specialty in the legal profession is workmen's compensation laws. As to plaintiffs, it has come about that a national association has been organized by attorneys with chief interests centering about workmen's compensation.

It was inevitable that evils would arise so that many states have devised legislation with respect to attorney's fees and procedures governing such matters. The Bureau of Labor Standards of the U. S. Department of Labor in its Bulletin 220 for September, 1960, has presented a report of the standards and procedures in state legislation in respect to attorney's fees in workmen's compensation.* This report represents a condensation of its major sections.

Introduction

In the administration of a workmen's compensation law, a primary objective is the prompt and full payment of uncontested claims and the speedy and equitable determination of disputes. As one authority, Dr. E. H. Downey, has stated: "To necessitous claimants a costly remedy is no remedy at all. To a disabled workman and to his family delay itself is a denial of justice."

In the vast majority of uncontested claims for compensation benefits arising out of approximately two million work accidents reported annually, the objective of expeditious dispositions has been realized to a substantial degree. These claims, for the most part, involve injuries of varying periods of disablement of relatively short temporary nature where the worker, following duration, returns to his job fully recovered.

The story is quite different with respect to the serious work accidents resulting in approximately 14,000 deaths and 84,000 permanent injuries of varying types annually. These claims, with substantial sums at stake, are often sharply contested and punctuated with controversy and litigation over issues involving difficult interpretation of such terms as "personal injury," "by accident," "arising out of," "in the course of," and with such questions as extent of disability and dependency. With numerous and varied amendments added to workmen's compensation laws at practically every legislative session and with the laws and court decisions becoming more technical, the promise of a workmen's compensation system intended to produce simple justice without litigation and without delays, is far from fulfillment. There can be no doubt that in this area of law, characterized as "litigiously prolific," by the late Supreme Court Justice Murphy in the case of *Cardillo* v. *Liberty Mutual Insurance Co.*, 330 U.S. 469 (1947), the use of counsel to represent claimants at hearings before administrative tribunals is growing. Their services in behalf of claimants at hearings have become increasingly important, particularly when employers and insurance carriers are usually represented by able and experienced counsel. It is reported that approximately 5,000 attorneys are employed by insurance carriers and self-insurers in workmen's compensation matters primarily.

It was a new deal for the injured worker in the United States when the workmen's compensation laws, which were first enacted 50 years ago, swept away the harsh ground rules as well as the expense, delay, and uncertainty of the common law principles and employers' liability laws governing the compensation of workmen for industrial accidents until the early 1900's. Based upon the new legal concept of liability without fault, workmen's compensation systems purported to reduce to a minimum the expense of attorneys' fees and to assure to injured workmen and their families the aggregate of the award. Official investigating committees soon discovered, however, that in a number of states, attorneys' fees in some instances totaled as much as 50% of the total amount awarded, particularly in cases settled on a lump-sum basis. To provide some measure of protection to claimants seeking relief under the compensation laws against excessive attorneys' fees, practically all states, in the exercise of their police powers, now have laws providing some regulation.

In an effort to present a comprehensive view of

*Copies of the complete bulletin may be obtained without charge from the Bureau of Labor Standards, U. S. Department of Labor, Washington 25, D. C.

this problem, this report discusses such related aspects as fee allowances; factors considered when determining the amounts to be allowed as attorneys' fees; types of cases in which the cost of the attorneys' fees is shifted from the claimant to the employer or insurance carrier; methods of reducing costs to claimants; provisions safeguarding claimants against unfair practices; and the extent to which lay persons are permitted to represent claimants.

Three Basic Methods of Regulating Attorneys' Fees

All but two jurisdictions — Maine and Nevada — specifically provide, by statute, for the regulation of legal fees for claimants' attorneys. No such regulation has been made applicable to the fees of counsel representing employers or insurance carriers. These provisions fall, roughly, into three main categories (1) those of a mandatory type, providing that no fees shall be valid unless the amount has been approved by the administrative agency or court; (2) those of a somewhat flexible type, subjecting fees under varying conditions to the approval of the agency or court; and (3) those of an optional type, enabling the agency to pass on the reasonableness of fees if requested by the parties.

Mandatory Method: Only 19 jurisdictions are included in this group — Alabama, Alaska, Arkansas, California, Colorado, District of Columbia, Florida, Hawaii, Louisiana, Maryland, Minnesota, Mississippi, Nebraska, New Jersey, New York, Oklahoma, Oregon, Pennsylvania, and Washington. Typical of these laws is that of New Jersey which provides, simply but effectively, that all counsel fees for claimants' attorneys shall first be approved by the workmen's compensation division before payment. The District of Columbia, New York and a number of other states in this group, apply substantially the same principle; namely, that no claim for legal services shall be valid or enforceable unless fixed and approved by the administrative agency or court. California and several other states prefer to use what seems a more precise expression of the same principle by providing that no charge, claim, or agreement for legal services is enforceable, valid, or binding in excess of a reasonable amount and the Commission determines what constitutes such reasonable amount.

The laws of all these jurisdictions appear to have one basic element in common; namely, that approval by the agency or court is required to validate claims or allowances of fees received by claimants' attorneys. In providing for affirmative action to be taken to determine the amount of the attorneys' fees to be allowed, an effective measure of control is thus achieved.

Flexible Method: Of the 26 jurisdictions falling into this category, 16 — Connecticut, Delaware, Georgia, Idaho, Indiana, Iowa, Kentucky, Massachusetts, Michigan, North Carolina, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, and Virginia — provide that attorneys' fees are or shall be subject to the approval of the administrative agency or court. The remaining 10 jurisdictions in this group — Kansas, Missouri, New Hampshire, New Mexico, Ohio, Puerto Rico, Vermont, West Virginia, Wisconsin, and Wyoming — qualify and limit the degree to which attorneys' fees shall be regulated.

Out of this entire group, only 10 jurisdictions — Georgia, Indiana, Kentucky, New Mexico, North Carolina, Puerto Rico, Rhode Island, South Carolina, Tennessee, and Vermont — follow the practice of taking affirmative action in determining the allowances of attorneys' fees prior to any payment. Approval action is also required in Michigan when the claim of the attorney's fee exceeds 25% of accrued compensation; in Wyoming when payment is to be made from the Industrial Accident Fund; and in Kansas and Missouri when attorneys seek lien protection. The remaining 12 states exercise their statutory power to regulate and control the allowances of attorneys' fees only (1) when a specific request for a determination is made by the claimant or his attorney, (2) when a controversy arises over the amount of the fee, or (3) when it is believed that an inquiry concerning fees is warranted.

Optional Method: The 5 states in this group — Arizona, Illinois, Montana, North Dakota, and Utah — follow the practice of determining, by agency action, the reasonableness of attorneys' fees upon application of the parties; otherwise, the amount of the fee is left for negotiation between the claimant and his attorney.

To summarize this brief analysis, in practically all jurisdictions, some power has been vested in the state agencies to control attorneys' fees. However, to be effective, control should be mandatory. As noted above, only 29 jurisdictions follow this positive approach. A power to control upon the request of either party, or when a controversy arises, or when the agency sees fit to require the parties to act, affords little if any protection to claimants. It is significant that a number of states utilizing this latter approach have reported their methods as too indefinite for completely satisfactory regulation and control.

Amount of Fees Allowed Claimants' Attorneys

The following 18 jurisdictions establish, by statute or regulation, the maximum fees to be allowed claimants' attorneys; Alaska, however, sets a minimum-fee sliding scale of not less than 25% on the first $1,000 and 10% on the balance:

Jurisdictions	Maximum Allowed (Usual)
Alabama	15%.
Arkansas	30% on first $1,000, 20% on next $1,000, and 5% on balance.
Illinois	20% in undisputed temporary disability cases.
Indiana	$15 minimum and 15% on first $1,000, 10% on next $2,000, and 5% on balance.
Kansas	25% as a lien.
Kentucky	20%.
Louisiana	20% on first $5,000, 10% on balance.
Michigan	25%, excess requires approval.
Mississippi	25%.
New Jersey	20%.
New Mexico	10%.
Puerto Rico	15%.
Tennessee	20%.
Texas	15%, 30% if settled by court.
Washington	10% to 35% of increase in award.
West Virginia	$75 to $500.
Wisconsin	10% up to $100 in nondispute cases, 20% in dispute cases.
Wyoming	10% up to $100, up to $300 in supreme court.

Although neither statutes nor rules prescribe the fees to be allowed in the following 13 states, fixed schedules, which are used as guides to determine the allowances, have nevertheless been adopted as operating policies:

State	Policy
California	Usually allows 10% on settlements.
Florida	30% on first $500, 20% on second $500, and 10% on all sums in excess of $1,000 of compensation. The Florida Commission reports that fees have averaged around 15% since this policy was adopted in 1941.
Georgia	25% to 33⅓%.
Idaho	20% for settlements by negotiation, 25% for settlements after petition before ordering hearing, and 33⅓% for recovery of award after hearing, including appellate proceedings.
Maryland	20% in controverted cases.
Minnesota	25%.
Missouri	10% to 25%.
Nebraska	25%.
Ohio	20%.
Oregon	$100 to $750.
Rhode Island	15% on first $1,000 and 10% on balance in case of lump-sum commutations.
Utah	10%.
Virginia	10% to 15%.

The remaining 18 jurisdictions — Arizona, Colorado, Connecticut, Delaware, District of Columbia, Hawaii, Iowa, Massachusetts, Montana, New Hampshire, New York, North Carolina, North Dakota, Oklahoma, Pennsylvania, South Carolina, South Dakota, and Vermont — determine the amount of the attorneys' fees to be allowed on an individual case basis.

Acceptance of Unapproved Fees Prohibited: The acceptance by attorneys of fees in compensation cases, unless approved, or the receipt of fees in amounts exceeding the prescribed or approved limit are deemed misdemeanors, punishable by fine or imprisonment, or both, in the District of Columbia and 11 states — Alaska, Florida, Georgia, Hawaii, Louisiana, Mississippi, New Mexico, New York, North Carolina, South Carolina, and Wyoming. New Jersey, by regulation, provides that cases involving unlawful charges by attorneys are referred to the Supreme Court or to the Ethics Committee of the Bar Association. In Tennessee, the attorney is subject to disbarment and forfeits twice the amount retained. In Wisconsin, the attorney also forfeits double the amount retained by him, the same to be collected by the state, upon complaint by the Industrial Commission.

Factors To Consider When Determining Allowances of Attorneys' Fees: In determining the amount of the fees to be allowed, the factors generally taken into consideration are the length of time taken on the hearing; the amount involved; complicated nature of the case; the number of witnesses; the ability, standing, skill and experience of the attorney; the nature and extent of the legal services actually performed and the benefits derived therefrom. In New York, all fees are approved by the Workmen's Compensation Board, in an amount commensurate with the services rendered, with due regard for the financial status of the claimant, and in no case based solely on the amount of the award. This latter point is very significant since, in many instances, the awards are for a sum which might, in any event, have been paid in part without contest. The recovery as to which there was a controversy may be for a nominal amount, whereas the face of the award may call for a substantial amount. The face of the full award therefore is no proper measure on which to base the fee.

In addition, in view of the social objectives and humanitarian purposes served by workmen's compensation laws, remuneration for services of attorneys in effecting recovery should properly be in smaller proportion than in commercial recoveries or in the ordinary negligence actions for damages in the civil courts. In *Matter of Fisch*, 188 App. Div. 525 (N. Y. 1919), the court stated: "One of the avowed reasons for the passage of the workmen's compensation act was to insure as large a return to the injured workman as possible. . . . Members of the bar should honestly, straightforwardly and sincerely aid in the carrying out of this beneficent legislation and if they are unwilling to do the work for the amount allowed by the Commission, they should stand aside and let others do it."

Moreover, there would appear to be a marked difference in the services rendered by attorneys in the typical civil negligence cases brought before the courts, as compared with their limited service in the handling of ordinary contested compensation claims. In negligence suits for damages in the civil courts, the attorney usually investigates and prepares the facts, searches for the law in point, handles the case in accordance with established rules of procedure and evidence, and takes, in appropriate cases, appeals to appel-

late courts. In particular, formal pleadings are prepared, motions made, congested calendars faced, witnesses examined and cross-examined, exceptions to court rulings often raised, and points of law argued.

In compensation cases before administrative agencies, the notice of injury and claim for compensation forms are simplified and standardized; consultive service with agency officials is readily available; informal procedures to insure against the loss of any case by reason of technical errors in presentation are followed; the ordinary rules of evidence are not binding; the reports of the employer, physicians, and agency's investigatory staff are made available; the findings, awards and decisions are generally drafted by the agencies; and calendars are often set up to reduce waiting time for trial to a minimum, thereby enabling attorneys to appear at several hearings in one day. These considerations narrow the scope of the attorney's function in workmen's compensation practice and materially reduce the amount of services. They represent a real reason why lower fees in compensation cases in comparison with the remuneration in civil practice are justified.

Fees — How and When Payable: It is reported by most states that the attorneys' fees are usually paid in a lump sum; however, many of these states also report that the fee is sometimes paid in periodical installments as accrued; in other words, in the same manner as received by the claimant. In some states the method and manner of the payment of attorneys' fees is left solely to the discretion of the state agency. Where unpaid benefits have accrued, the attorneys' fees are awarded in a lump sum from the accrued benefits, and the remaining payments to the worker are made periodically.

Disputes concerning excessive or inadequate fees are determined generally by hearing before the agency with, in most cases, the right to appeal, as in all other compensation matters.

In 17 jurisdictions — California, Colorado, District of Columbia, Hawaii, Iowa, Kansas, Louisiana, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, Nebraska, New Jersey, New York, Oklahoma, and Pennsylvania — attorneys' fees upon approval become enforceable liens against any compensation paid or to be paid.

Adding Attorneys' Fees to Award

The basic rule in litigation, as stated by Arthur Larson, is "each party pays his own lawyer, win or lose." In a number of jurisdictions, however, in workmen's compensation cases, the financial burden of paying attorneys' fees has been shifted from the claimants to the employers or carriers in cases where (1) the employer neglects or refuses to pay compensation within a reasonable time after compensation is due; (2) the defense is without reasonable ground; (3) a review or an appeal is not supportable; or (4) employers are uninsured.

Florida combines a number of these grounds as a basis for adding the attorney's fee to the successful claimant's award by providing that if the employer or carrier shall file notice of controversy, or shall decline to pay a claim on or before the 21st day after they have notice of same, or shall otherwise resist unsuccessfully the payment of compensation, and the injured person shall have employed an attorney in the successful prosecution of his claim, there shall, in addition to the award for compensation, be awarded a reasonable attorney's fee, to be approved by the Industrial Commission, which may be paid direct to the attorney for the claimant in a lump sum. If any proceedings are had for review of any claim, award or compensation order before any court, the court may allow or increase the attorneys' fees, in its discretion, which fees shall be in addition to the compensation paid the claimant, and shall be paid as the court may direct.

In six other states — Alaska, Georgia, Idaho, Nebraska, New Jersey, and New Mexico — claimants' attorneys' fees are assessed against employers when the employers have neglected or refused to pay compensation within a reasonable time after receipt of a claim for compensation (the period of time varies from 15 to 30 days).

If it is determined that the defense was without reasonable ground, claimants' attorneys' fees are assessed against the defendant in eight states — Alaska, Arkansas, Georgia, Idaho, Maryland, Massachusetts, North Carolina, and Virginia.

With respect to proceedings on review or appeals, reasonable attorneys' fees may be assessed by the court against the unsuccessful employers or carriers in seven jurisdictions — Alaska, California, District of Columbia, Massachusetts, Minnesota, Nebraska, and North Carolina.

In three jurisdictions — California, Georgia, and Puerto Rico — attorneys' fees are assessed against uninsured employers.

Payment of Attorneys' Fees by Administrative Agencies or From Accident Funds: Three states — Washington, Oregon, and North Dakota — provide for the payment of claimants' attorneys' fees either by the administrative agencies or from the Industrial Accident Fund.

In Washington, on appeal to the Superior Court, the state agency pays the attorneys' fees when the worker prevails in his appeal. In Oregon, where a claimant prevails in an appeal to the circuit court from an Industrial Accident Commission order rejecting the original claim for compensation, the court allows a reasonable

fee to the claimant's attorney payable from the Industrial Accident Fund as an administrative expense. In North Dakota, at the Workmen's Compensation Bureau level, the attorneys' fees are paid from the award, but where the proceedings are before the District Court on appeal, the attorneys' fees are fixed by the trial judge, and taxed against the Bureau, but such fee shall not be in excess of 20% of the amount allowed on appeal over and above the award made by the Bureau in its final action prior to appeal.

Third-Party Tort Actions: Attorneys' fees involved in a third-party negligence tort action growing out of an industrial injury compensable under a state workmen's compensation law are left to determination by the parties, but are also subject to some degree of statutory regulation. The state statutes generally permit claimants, in case of third-party injuries, to join with their employer in a suit against the one causing the injury and resulting disability, and to either receive all or at least an equitable share of any judgment rendered exceeding the cost to the employer plus reasonable expenses of suit where negligence is established and the third party is able to respond in damages.

Usually attorneys' fees and expenses are deducted both in priority to the employer's lien on the employee's recovery, and before there is any excess for the employee in the employer's recovery. If the sum recovered by the employee is more than enough to pay attorneys' fees and reimburse the carrier, the carrier is reimbursed in full, and is not required to share the legal expenses involved in obtaining the recovery. In other words, under the usual provision, the legal expenses diminish the over-all sum to which the insurer's claim attaches; but if it is possible to do so within that fund as diminished, the insurer is entitled to be reimbursed in full.

Methods of Reducing Costs to Claimants

Two significant approaches have been taken by a number of states to eliminate or minimize the expense to the injured worker of attorneys' fees: first, to assign counsel to claimants at no cost; and secondly, to provide for a prehearing conference or informal hearings procedure.

Assignment of Counsel to Claimants at No Cost: All jurisdictions follow the practice of providing to claimants, as a public service, free consultation, assistance and advice concerning the steps to be taken in filing and prosecuting claims for workmen's compensation benefits. In the event of contested claims or formal litigation, it is the general rule for claimants to retain their own counsel. There are, however, a number of significant departures from this rule. South Dakota, for example, provides that on written application of any claimant it shall be the duty of the state's attorney of the county in which the accident occurred to appear for such claimant in any and all hearings conducted, as a part of his official duty and without cost to the claimant. This, however, shall in no way prevent the claimant from employing any counsel he desires. In Wyoming, county and prosecuting attorneys give legal advice to any injured workman and prepare all statements of claims or other necessary papers, free of all charges and costs. New Jersey provides that if a worker is unable to pay an attorney when the employer appeals, he shall be assigned counsel by the county court judge.

In Colorado, upon claimant's request, the Industrial Commission assigns counsel, provided the claimant shows he is unable to employ counsel on his own behalf and that counsel is required and necessary. In proceedings where counsel is so assigned the Commission fixes the fee payable from the award; however, if no compensation is awarded or found to be due, the Commission pays the fee from its unencumbered funds.

Under the court-administered systems in New Mexico and Louisiana, lawyers are appointed to advise unrepresented employees or their dependents concerning proposed compromise settlements submitted to the court for approval. In Louisiana, the fee for such service is taxable as costs, in an amount not to exceed $15. In New Mexico, the court fixes a reasonable fee to be taxed as part of costs against the employer. Pennsylvania and Puerto Rico are also reported to be following the practice of providing the worker with an attorney, at no cost.

Minnesota has gone farthest in applying to compensation the practice of providing counsel at no cost to the claimants. Under the Minnesota law, the Industrial Commission assigns certain members of its staff to advise the parties as to their legal rights, to attempt to settle a controversy if possible, and to conduct the claimant's case if the matter goes to a hearing. In 1953, the Chairman of the Minnesota Industrial Commission reported that of the 14 attorneys employed by the Commission, six were available for the trial of cases before the referees. They handled the cases from the filing of the petition on through the appeal to the Commission, which sits as an appellate board, and up through the State Supreme Court on writs of certiorari. During the year ending July 1, 1952, these attorneys handled 315 cases, which was 31½% of all contested cases processed through the department. Of these 315 cases, payments were made in 284 cases in amounts totaling $450,214, together with medical benefits in the same cases of $155,567 paid to, or in behalf of, injured employees. In Minnesota, the practice is to allow attorneys'

fees not to exceed 25% of the compensation awarded. If this fee had been charged against the compensation recovered by the injured employees in these cases, the employees would have parted with $112,500. Attorneys' fees are not allowed on medical and hospital bills except in extraordinary cases.

During the same year ending July 1, 1952, in addition to the cases set for hearing, the attorneys assisted in negotiating settlements in 193 compromised or noncontested cases; the total amount recovered being $147,086, with medical and hospital bills in the sum of $71,359. At the same percentage for attorneys' fees, there would have been $36,771 more charged to the injured employees. Aside from the contested and noncontested settlements, the attorneys by way of advice and counsel in the office and over the telephone aided 100,000 people with compensation problems during the year ending July 1, 1952.

It is significant, as stated by former Chairman Robert E. Faricy of the Minnesota Commission, that there is practically no complaint from the bar association or individual lawyers by reason of the state attorneys handling these cases since the policy of the department has been to accept, as far as possible, only those cases which, in all likelihood, would not be of sufficient importance or sufficiently remunerative for an attorney in private practice to accept. Many cases handled by the state attorneys involve only several weeks compensation and, in some, only a small medical bill. It is apparent that no outside attorney would accept these cases and that the injured workers might be without remedy unless the Commission furnished this service to them. The satisfactory administration of the law in furnishing legal assistance is demonstrated by the constant and continuous retention of this feature of the Minnesota law and, as emphasized by Commissioner Faricy of the Commission, it is believed that this tested procedure, which has been in operation since the Commission was first established in 1921, has enabled the state agency to perform an effective public service in the best interests of all parties concerned.

Prehearing Conferences and Informal Hearings: Practical operating experience has also demonstrated the effectiveness of the prehearing conference and informal hearings procedure in increasing the efficiency of the administrative process. Under the prehearing system, the hearings officer of the state agency calls the parties together with no reporters or witnesses present, discusses the points of difference, and makes every reasonable effort to adjust the controversy without going to a formal hearing. In Florida, for example, which follows the prehearing conference procedure, it was reported that nine out of 10 controversies were disposed of at such conferences, thereby reducing very substantially the number of contested hearings and, at the same time, affording effective protection to the rights of claimants and minimizing the expense of counsel. The Deputy Commissioner in Florida, upon receiving a contested claim, examines the final report in the file to determine whether a real contest is present and, if so, to determine the extent to which the issues can be limited by stipulation or agreement between the parties who are notified to appear on a certain day prior to the hearing for a conference. As reported by a former director of the Workmen's Compensation Division, of the 130,000 reported injuries involving about 47,000 lost-time accidents in 1952, only about 3,000 contested hearings were held in the state.

A former Deputy Commissioner, Bureau of Employees' Compensation of the U.S. Department of Labor, for the Federal Longshoremen's and Harbor Workers' Compensation Act, in San Francisco, California, reported in 1956 that in his experience nine out of every 10 controversies which came to his office were disposed of at such conferences.

Since 1914, New Jersey has had in addition to a system of pretrial conferences one system or another of informal hearings, which takes place before a formal claim petition is filed. Usually the injured employee or the insurance carrier requests such a hearing before the state agency either before or after an agreement has been reached in a case. Based upon the evidence and discussion with the parties, the referee will recommend a particular settlement. The recommendation need not be accepted by either side. The informal hearing serves as a mediation process designated to promote prompt settlements of claims, thereby avoiding the expense and delay of formal hearings.

Safeguarding Claimants Against Unfair Practices

Solicitation of Claims by Attorneys and Lay Persons: Equally as important as measures regulating attorneys' fees are measures to safeguard claimants against unfair practices of attorneys and lay persons in compensation cases. Over the years many complaints and investigations about the unethical conduct of such persons in compensation proceedings have been made. It became the practice after the passage of some of the early laws, for certain persons, not attorneys, to solicit the business of appearing for claimants at compensation hearings. Such people came to be known as "runners." In his study of workmen's compensation administration, Walter F. Dodd reported that soon after the passage of the New York law in 1914, it became a common

practice for runners to prey chiefly upon the foreign-born claimant, in which class fell some 50 to 75% of all claimants in New York City. It was not until 1928 that legislative action was taken to require all claimants' representatives, except attorneys, to obtain a license from the Industrial Commissioner, subject to revocation after hearing.

Professor Dodd's study also reported that a number of the lawyers engaged in compensation practice in the Chicago district employed agents or runners to solicit business for them. The runners were reported to be scattered about the Loop in Chicago and to be particularly active around the building in which the Commission had its offices, where they accosted injured workmen and made extravagant promises as to the awards they could obtain. The runners were also reported to reach agreements with doctors, nurses, and hospital interns, through whom they secured compensation cases. Some lawyers, it was found, solicited compensation clients through advertising in foreign-language newspapers. Claim adjusters of insurance companies were reported to have sent injured men to certain attorneys for a split of the fee. In other states, such as Ohio, lawyers and runners were also reported to have been very active. In New Jersey, allegations of ambulance chasing were still being made in a series of articles written as recently as 1955.

Upon proof of solicitation of claims, the parties are held guilty of a misdemeanor, punishable by fine or imprisonment, or both, in the District of Columbia and in the states of Alabama, Florida, Georgia, Hawaii, Louisiana, Mississippi, New York, North Carolina, Ohio, and South Carolina, with fines ranging from $100 to $5,000 and terms of imprisonment ranging from 90 days to one year. In Kentucky, the Board denies or reduces the attorneys' fees upon proof of solicitation of claims. In Alabama in similar situations attorneys are subject to disbarment. In New Jersey, the Commissioner, Department of Labor and Industry, is authorized to investigate cases of misconduct or unlawful charges and, on notice to the attorney involved, conducts a hearing. If the Commissioner finds the complaint justified, the matter is referred to the Supreme Court or the Bar Association's Ethics Committee, or he may take such other action as he deems necessary. The solicitation of cases or payments of referral fees to anyone not an attorney is forbidden; and there have been instances of suspension of attorneys from practice before the Workmen's Compensation Division for violation of these rules.

Representation by Lay Persons: Even in states with the simplest contested claim procedures, claimants must often be represented by someone familiar with the compensation law and procedure. Labor organizations in New York and other states arrange for the representation of their members. There is much value in such a plan, for it can provide for skilled representation of the claimant's case in much the same manner in which the insurance company provides for skilled presentation of the employer's case. Legal aid societies in a number of industrial communities have also rendered a high type of service to a limited number of claimants.

Lay persons are prohibited from representing claimants before administrative agencies, either by law, regulation, opinion of the attorney general, or by court decision in the following 23 states: Arizona, Delaware, Florida, Georgia, Illinois, Indiana, Kentucky, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Carolina, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia, and West Virginia. Of the five states with court administration, Alabama, Louisiana, New Mexico, and Tennessee prohibit lay persons from representing claimants. However, in Wyoming, where adjudication of claims is made by district judges and where county attorneys represent injured workmen and other claimants without charge, the workman himself or a lay person, in his behalf, may nevertheless appear before the court.

Many of the states justify restrictions on representation on the ground that representation by lay persons constitutes unlawful practice of law. However, in practically all instances, lay persons are permitted to handle claims before the compensation agencies when acting as adjusters in behalf of insurance carriers. In all states, an injured claimant can appear on his own behalf before the administrative agencies without an attorney, or anyone else, to represent him.

Lay persons are permitted to represent claimants either by statute, regulation or operating policy before the administrative agencies in the remaining 24 jurisdictions: Alaska, Arkansas, California, Colorado, Connecticut, District of Columbia, Hawaii, Idaho, Iowa, Kansas, Maine, Maryland, Massachusetts, Nevada, New York, North Dakota, Ohio, Oregon, South Dakota, Texas, Utah, Washington, Wisconsin, and Puerto Rico. A number of these jurisdictions, such as Ohio and New York, have adopted a licensing procedure applicable to lay persons. In New York, for example, applicants for licenses must show, among other things, that they are persons of good moral character and have a competent knowledge of the law and regulations relating to workmen's compensation matters.

Books

Carter's Microbiology and Pathology

Alice Lorraine Smith. Seventh Edition. $7.50. Pp. 742, illustrated. C. V. Mosby Co., St. Louis, Mo., 1960.

In years long past, it was frequent but not customary that one individual in a medical college would serve as the head of two related departments. Pharmacology and Therapeutics was a common combination. The inception of this book (1928) was near the end of that period. In the beginning this book was directed to the education of nurses in bacteriology and pathology. Later editions became more comprehensive so that now, well it may serve as a text for medical student training and as a reference book for the physician in practice. This is not for the skilled bacteriologists or pathologist.

This book has a following. The chief function served by this minor review is to announce the advent of the much enlarged and much revised seventh edition. Welcome old friend.

Handbook of Neurological Diagnostic Methods

Fletcher McCowell and Harold G. Wolff. $4.50. Pp. 201, illustrated. The Williams & Wilkins Co., Baltimore, Md., 1960.

In a measure the surge of popular appeal of psychiatry has overshadowed neurology. The cigar counter salesman may talk glibly about psychiatry and many a dinner partner may talk learnedly about ambivalence and anxiety neuroses. But whoever, in that pause just before dessert arrives started a conversation on pneumoencephalography? Neurology's appeal is to physicians, but that appeal should wax since about 15% of those who die each year in the United States of America die as a result of defects in the nervous system and since a comparable percentage of patients admitted to general hospitals have evidence of lesions within the nervous system that result in symptoms and signs, it seems reasonable to expect all physicians to be familiar with the methods of assessing defects in the function of this system. Furthermore, since an increasingly large population of patients are incapacitated because of disturbances of the highest level functions of the nervous system as shown by dysfunction in thought, behavior, attitude and mood, all who work with the sick should be able to assess the nature of the disorder and take part in decisions about the patient's management.

To collect the facts of function or its disorders first and then possibly to draw inferences concerning their anatomical, physiological, and pathological significance that may ultimately lead to a formulation and a plan of therapeutic procedure, is the goal of this manual of methods.

The Choice of a Medical Career

Joseph Garland and Joseph Stokes, Editors, $5.00. Pp. 231. J. B. Lippincott Company, Philadelphia, 1961.

The essays compiled in *The Choice of a Medical Career* are a reflection of the degree of specialization that has developed during the past few decades. The decision to enter the field of medicine is no longer enough; the young man or woman must now make additional decisions regarding the area in which further training is to be sought and in which their professional life is to be lived.

In this small book is the "gradually acquired wisdom of a number of leaders in their respective fields." The editors state the purpose in these words: ". . . to convey to the student or the physician on the threshold of a medical career as complete a picture as possible of the profession to which he is dedicating himself and the opportunities that it presents."

This purpose has been served well; to cavil, only three of the recognized specialties are not represented: Pathology, Plastic Surgery, and Proctology. The others are ably discussed by such physicians as Clarence S. Livingood, on Dermatology, Benjamin Tenney, on Obstetrics and Gynecology, Howard A. Rusk, on Physical Medicine and Rehabilitation, Leona Baumgartner, on Administration and Public Health, W. Barry Wood, Jr., on the basic medical sciences, and Harriet L. Hardy on Occupational Medicine.

Dr. Hardy's chapter, which will be of particular interest to readers of this journal, covers occupational medicine from its earliest known practice — 2300 B. C., in Egypt where there were not only palace physicians but also physicians whose duty was the care of mine workers — to Paracelsus in the sixteenth century and Ramazzini in the eighteenth, to recognition of occupational medicine as a specialty in the United States in 1955. She describes the lack of responsibility for worker health which characterized American industry and medical practice until the third decade of our century, and compares this with the concern and research and practice on the part of industry, government and the universities now current.

Dr. Hardy outlines the varied and vast opportunities available in occupational medicine and concludes:

The doctor who chooses a career in occupational health will by necessity learn many new and strange facets of other disciplines. He will be extraordinarily useful to our society through the prevention of illness and through the establishment of conditions favorable to good health, be he practitioner, teacher, or investigator. The personal satisfaction derived from using one's professional training to be a part of the changes of one's times can hardly be exaggerated.

For her discussion alone, this book is of immense value to physicians considering this specialty and to others who would guide the student in this path.

From Fish to Philosopher

Homer W. Smith. Pp. 304. Published and distributed free of charge by Ciba Pharmaceutical Products, Inc., Summit, N. J., 1959.

Man is a creature dissolved in water. This water with its complex contents constitutes man's internal environment. Over this vital environment the kidneys preside in regal importance. Because by chance that life form later to emerge as man acquired the rudiments of what became the best renal system, eventual man, with all his shortcomings, stands out as evolution's prime product. All that finds better exposition in these passages:

Nearly a century has elapsed since Claude Bernard, among the most notable of nineteenth century physiologists, first pointed out that the true medium in which we live is neither air nor water, but the plasma or liquid part of the blood that bathes all the tissue elements. This "internal environment," as he later called it, is so isolated from the world that atmospheric disturbances cannot alter it or penetrate beyond it: "It is as though the organism had enclosed itself," he said, "in a kind of hothouse where the perpetual changes in external conditions cannot reach it." It was Bernard's view that we achieve a free and independent life, physically and mentally, because of the constancy of the composition of our internal environment.

"The lungs serve to maintain the composition of the extracellular fluid with respect to oxygen and carbon dioxide, and with this their duty ends. The responsibility for maintaining the composition of this fluid in respect to other constituents devolves on the kidneys. It is no exaggeration to say that the composition of the body fluids is determined not by what the mouth takes in but by what the kidneys keep: they are the master chemists of our internal environment, which, so to speak, they manufacture in reverse by working it over completely some 15 times a day. When, among other duties, they excrete the ashes of our body fires, or remove from the blood the infinite variety of foreign substances that are constantly being absorbed from our indiscriminate gastrointestinal tracts, these excretory operations are incidental to the major task of keeping our internal environment in an ideal, balance state. Our bones, muscles, glands, even our brains, are called upon to do only one kind of physiological work, but our kidneys are called upon to perform an innumerable variety of operations. Bones can break, muscles can atrophy, glands can loaf, even the brain can go to sleep, and endanger our survival; but should the kidneys fail in their task neither bone, muscle nor brain could carry on."

This is the story of how our kidneys work, and of how they came to work the way they do—which is the story of the evolution of the vertebrates, of which man is the most notable and intelligent species and the only philosopher.

"Man was certainly not the goal of evolution, which evidently had no goal. He was not planned, in an operation wholly planless. He is not the ultimate in a single constant trend toward higher things, in a history of life with innumerable trends, none of them constant, and some toward the lower rather than the higher. Is his place in nature, then, that of a mere accident without significance? . . . The situation is as badly misrepresented and the lesson as poorly learned when man is considered nothing but an accident as when he is considered as the destined crown of creation. His rise was neither insignificant nor inevitable. Man did originate after a tremendously long sequence of events in which both chance and orientation played a part. Not all the chance favored his appearance, none might have, but enough did. Not all the orientation was in his direction, it did not lead unerringly humanward, but some of it came his way. The result is the most highly endowed organization of matter that has yet appeared on the earth — and we certainly have no good reason to believe there is any higher in the universe. . . ."

This book holds nothing precisely to be identified with occupational health — nothing more than may be associated with neurology or rheology or any other pursuits attractive to professional man. Yet any physician who finds the reading of this book to be an exciting adventure is to be marked as a person of culture and discernment.

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Bill H. R. 1341 Needs Doctor's Support

After almost 50 years of governmental silence in regard to automobile accident control, quite suddenly in 1956 the Roberts Committee began its historic and altogether admirable hearings on the problem of reducing motorist injuries incurred in unavoidable accidents. Since that time, four groups of hearings have considered the prevention of crash injuries at the technological or "hardware level" of their origin. A vast amount of information has been accumulated on the basis of which Bill H. R. 1341 was fathered and presented to the House.

The Bill allows the Department of Commerce, through the National Bureau of Standards, to establish safety standards for automobiles that are bought by the government for its own use. When the Bill was debated in the House, it was favored by both Democratic and Republican leaders of the Roberts Subcommittee. The vote in the House, favoring the Bill, was 265 to 125, more than two to one. It failed to get through the Senate Committee, headed by Senator Magnuson.

Congressman Roberts is confident that the Bill will pass by an even greater majority when it is reintroduced in the House soon; he hopes that doctors continue to give it their vigorous support — especially when it reaches the Senate. All those of the medical profession who are interested in safer cars are urged to write strong personal appeals to their congressmen and senators urging them to pass Bill H. R. 1341 and its Senate counterpart as soon as possible. Similar letters should also be addressed to Congressmen Kenneth Roberts and Senator Warren Magnuson.

Although this Bill would directly affect only about .2% of all the autos manufactured, it will allow new definitions of automotive safety standards to come into existence and will provide a potent start toward more practical results throughout the automobile industry.

Heretofore, our uneasy preoccupation with crash mortality has hindered our thinking with regard to crash morbidity. The recent upsurge of the latter, and the increments in the degree of morbidity which is flowing from this increase is focusing more and more attention upon this aspect of the problem. Happily, there is a way out of this grisly dilemma through improved standards of crash safety automotive design and

engineering, details of which are not beyond the common knowledge of researchers in this field who have given unstintingly the results of their studies to the automotive industry.

Doctors are in a good position to state their views in the defense of crash safety improvements, the need for which already has been written in the blood of their patients.

—JACOB KULOWSKI, M.D.

To The Editor:

I appreciate the opportunity to comment on Dr. Kulowski's editorial as I feel this type of legislation is very much needed. H. R. 1341 would bring into effect safety standards that are desperately needed in all automobiles. At the Senate hearing held in July of 1959, the Secretary of the Army, William M. Bruckers, replied to inquiries regarding this bill and dismissed it with the statement that major automobile manufacturers adhere to the "Uniform Code" and meet all state requirements. Fortunately, auto crash injury research progresses, and we find now no state requiring all of the needed realistic safety devices currently available on production cars.

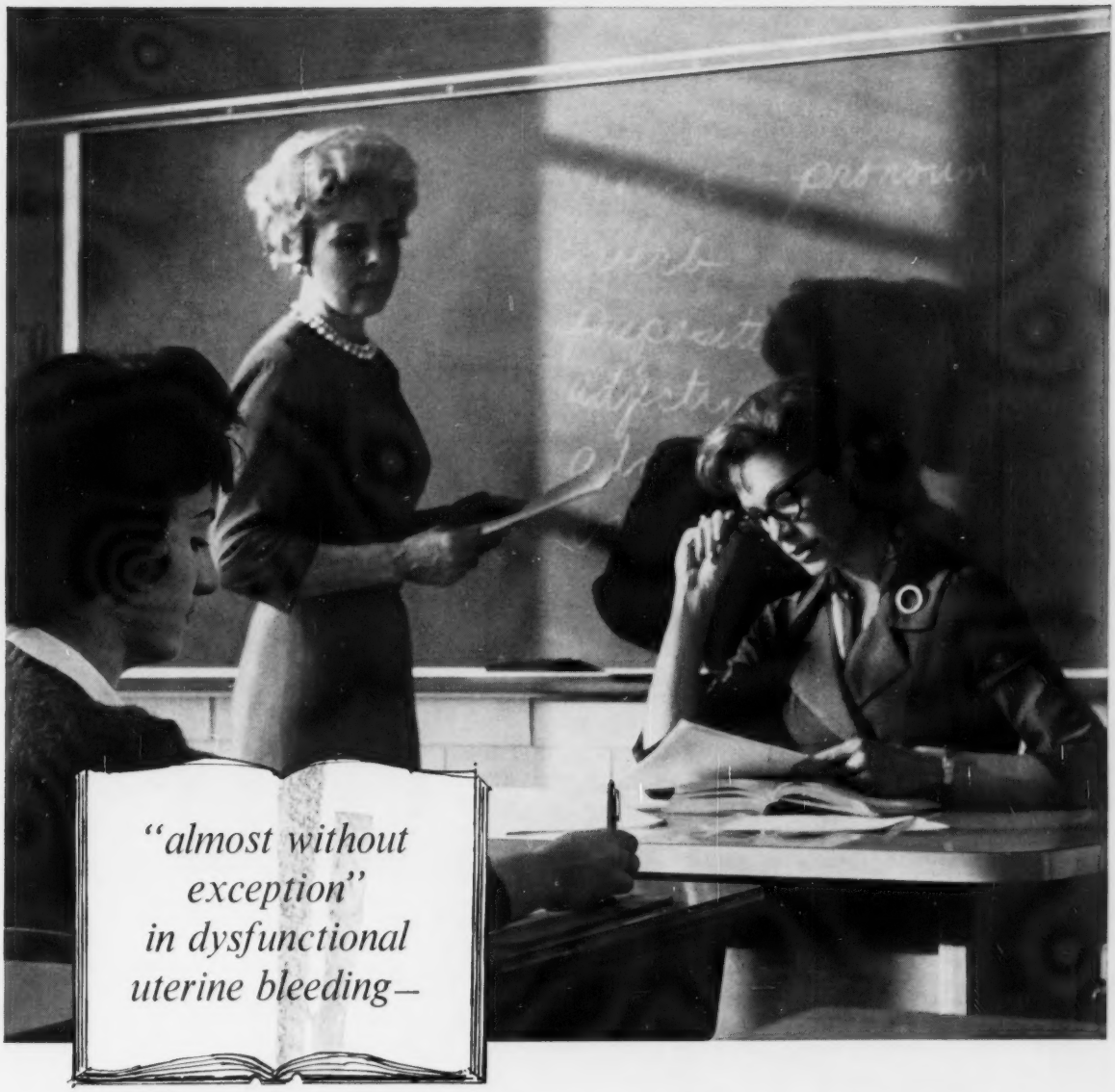
Presently, the General Services Administration is responsible for the specification of government vehicles and the Administrator, Franklin Floete, in a letter to the Honorable Owen Harris, dated June 3, 1959, states the "responsibility for safety standards applicable to the purchase or operation of government vehicles is being exercised by the General Services Administration." He states as an example of their (General Services Administration) action in the field of safety devices for motor equipment, Federal Supply Standard 122, which, "provides an option under which agencies requiring their use may order seat belts," and further states "in view of the above, General Services Administration does not regard the proposal made by H. R. 1341 as necessary and does not favor enactment." I mention this only to show that no realistic action has been taken regarding government vehicles. Many government agencies are making great strides to educate their personnel, and I believe that such measures as H. R. 1341 are necessary for several reasons. It will serve to acquaint those persons operating government vehicles with the safety equipment available, and it will encourage the automobile manufacturers to incorporate into their production cars ideas they know are worthwhile and have proved safety value.

It is little known that some automobiles are safer crash vehicles than others. I wish to point to an excellent article appearing in the magazine, *The Reporter*, in 1959 by Daniel Moynihan in which studies of two different makes of cars indicate an increase of accident rate of more than 50% from Make A to Make B, "which is attributable directly to auto design properties."

With evidence pyramiding in auto crash injury research, and action inverting, now seems the time for some direct approach. This is offered in H. R. 1341, and although it reaches only .2% of the automobiles manufactured, I believe it will be the stimulus the automobile industry needs to realize the fact that some groups are aware of auto crash safety. My only question concerning this bill is that I assume the Secretary of Commerce will have adequate advisement as to the safety standards and "reasonable safety devices" required in this bill.

The American Association for Automotive Medicine would like to see voluntary public demand for currently available auto crash safety equipment. Unfortunately, due to the implication that our truly greatest privilege, to drive a motor vehicle, is even loosely associated with danger seems to antagonize many drivers. I do not think this voluntary demand will occur and feel it is the duty of the medical profession to support any legislation which will, in a realistic fashion, offer a greater degree of protection to our nation's drivers.

—H. A. FENNER, JR., M.D.
President
American Association
for Automotive Medicine



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1. Southam, A. L.: Dysfunctional Uterine Bleeding in Adolescence, Clin. Obst. & Gynec. 3:241 (March) 1960.

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Reference: 1. Hardy, James D.: The Nature of Pain: J. of Chronic Diseases, Vol. 4, July 1956.

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COMMENT AND OPINION

New Safety Standards

More than 65 new and revised fire safety standards affecting a wide range of industrial and commercial interests will be up for action at the National Fire Protection Association's forthcoming annual conference which opens May 15 at the Statler Hilton Hotel in Detroit.

Printed copies of the proposals, and a meeting schedule showing when each will be discussed and acted upon, will be available from the Association about April 15.

In line with NFPA democratic procedures any interested party, whether or not a member of the Association, may speak for or against the proposals before action is taken at the meeting.

NFPA standards are widely made the basis for ordinances and regulations relating to fire safety, and also extensively used by commerce and industry as the basis for good practice.

Among the new and revised standards to be offered at the May meeting by NFPA technical committees are proposals in fields ranging from aviation and electronic computers to hospitals and service stations.

The text of the proposed new standards and revisions of existing ones will be printed in the NFPA 1961 Advance Reports, a single volume of approximately 1,000 pages. Distributed free to NFPA members, the volume is available at $3.50 per copy from the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass.

Safer On than Off

Intensified efforts by chemical manufacturers to improve on-the-job safety practices resulted in a decrease in the frequency rate of industrial injuries last year as compared to 1959, according to a report by the Manufacturing Chemists' Association. The frequency rate of injuries due to in-plant accidents declined from 3.38 per million man hours worked in 1959 to 3.19 per million man hours worked in 1960.

"This decline reflects a halt in the increase in the injury frequency rate which was evident in 1959," General John E. Hull, president of the MCA, stated in releasing the report. "Although the 1960 frequency rate is below that of 1959," Hull said, "it is still higher than the rates of the three previous years, which were 3.00, 3.01 and 2.98 respectively," he said. "We can by no means be complacent so long as the injury frequency rate remains above the record year of 1958."

The rate reported by MCA compares favorably with that announced by the National Safety Council for all manufacturing concerns. Despite the injury frequency rate increase to 3.38 reported by MCA in 1959 for the chemical industry, it is still below that reported by the Council of 6.47 injuries per million man hours worked for that year for all manufacturing.

There were 112 chemical manufacturing companies participating in 1960 in the Association's analysis of worker injury experience. These companies range in size from those employing less than 250 workers to companies employing more than 5,000 persons. Of those 112 companies, 30 also participated in an analysis of off-the-job injuries which in 1960 increased to 6.35 from 5.68 per million man hours of exposure in 1959.

Coincidentally, the on-the-job injury frequency rate for workers in those same 30 companies was 1.84 per million man hours worked.

"This would tend to indicate that chemical industry workers are relatively safer on the job than they are off," General Hull stated. "Also," he said, "there is increasing concern among chemical industry leaders that workers are not applying at home the safety lessons learned in the plant despite the fact that increasing emphasis is being placed on off-the-job safety by employers."

The MCA report reveals that the injury frequency rate last year was less than half the rate in 1946, the first year the Association began making its analysis, when there were 72 participating chemical firms.

In terms of severity rate of all

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Medical Director: Class A grad; Dipl, Prev Med; 10 yrs, med officer, USAMC; 2 yrs PH serv; 3 yrs asst med dir, lge oil co; currently, prev med officer, PH dept; prefers dirshp, indus, early 40s.

Medical Director: 3 yrs, res, int med; 3 yrs, fellow, indus med; 4 yrs, chief, occ hlth div, & asst med dir, lge co; 2 yrs, dir, clinical div, impor indus lab, assoc prof, indus med & chief phy lge regional plant, nationally known co, soft indus; Dipl, prev med in occ med; middle 30's.

Medical Director: Cert, occup med; Bd elig, int med; 5 yrs, phy in charge, lge plant, import co; 3 yrs med dir hvy indus; w/5000 employees; seeks opport 75% adm, 25% clin med; any loc.

Medical Director: Southerner; well qual surg; 2 yr med officer, USAMC; 3 yrs, med dir, regional plant, 4000 empl, leading co, semi-heavy indus; seeks dirshp, prev med program or safty hlth; prefers warm climate, consider foreign; mid 30's.

Medical Director: 38; MD, Tufts; 2 yrs plant phy, leadng corp; 5 yrs, plant phy, lge pharm co; seek med dir, lge co or plant chief phy; Dipl, prev med, Cert, occ med; MPH.

Medical Director or Assistant: 37; MPH, Harvard; working towards Cert, indus med; 4 yrs senior indus phy, nuclear co; 3 yrs Dir, occ hlth serv, lge co; seeks in-plant hlth prog; prefs NE or E.

Aviation Medical Director: Trained USAF schl, avia med; 10 yrs successful priv surg & indus pract; 4 yrs, flight surg, USAF; Dipl, Aviation Med; will consider med dirshp, lge indus; mid 40's.

Staff: 29; MD, U of Pittsburgh; years internship; 2 yrs, USHPA; past 8 mos, priv pract; seeks career post, occ med; pref coll twn; E.

Staff: Bd elig Occ Med; wkng twds MS, import grad schl PH, completng formal trng '61; seeks post w/opport for advancmnt pref SE-coast or Hawaii.

Staff: Cert in Oto, will do GP; w/4 yrs priv pract exper; speaks Spanish-French; seeks indus post in warm climate, pref Foreign.

Staff: 29 2 yrs USAMC; 1 yr priv pract; seeks career post in occ med; prefers E, consider all.

POSITIONS OPEN

Medical Director: Ped w/3 or more yrs ped res, import hsp; or internist w/nutritional interests leadng co; analyze med trends & wk w/Vice presidents in connectn w/new med products; 25% travel; to $18,000, excel benefits; MW.

Medical Director: With dynamic personality, Hd lge dept, med; leading retail organ, w/ over 7000 employees; $15,000, increases; nr NY.

Chief Physician: 2 mining units, of impor co; heavy indus; shld have deep understanding of the workman's problems; pref Bd internist, consider one w/int med exper; to $16,000; excel fringe benefits; 3 wks vac, 1 wk grad wrk; E.

Chief Physician: Unmarried phy; 18 mos contract, renewable; construction project outside of continental U.S., island w/in 3 hrs flying time of NYC; med care all-male crew, mostly technicians & engineers; $25,000 per yr; possibility no U.S. income tax; excel opport.

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injuries as measured in terms of calendar days lost per million man hours of exposure, the industry also showed a decline from 617 in 1959 to 552 in 1960.

For a More Effective Punch

A technique for tricking cancer cells into embracing chemical compounds that make them highly sensitive to x-rays has been described by a University of Wisconsin cancer researcher, Dr. Waclaw T. Szybalski. Though human cancer cells were used in his experiments, he cautioned that much work lies ahead before his method could be used to treat human cancer victims.

The experiments involved chemical changes in cell DNA, the cell's most important genetic material and the chemical carrier of hereditary information. The alterations were achieved by a substitution of chemicals while the cancer cells were growing and chemically building up DNA. The experimenters took one of three compounds: 5-chloro-; 5-bromo-; or 5-iododeoxyuridine and substituted these halogenated analogs for a natural part of cell DNA, thymidine. Dr. Szybalski's results showed that the three compounds were similar enough to the natural part of DNA that cancer cells incorporated them into their DNA.

The cell continues growing by dividing, as if nothing had happened. However, after one or two cell divisions, it is found that the cancer cell's sensitivity to x-rays has dramatically increased. Depending on the compound substituted and its concentration, the cancer cells become two to 20 times as sensitive to radiation as they were before.

The beatuy of the principle is that it does not harm normal cells surrounding a tumor. This is because normal cells rarely divide and only dividing cells, such as cancer cells, can incorporate substituted compounds in this way. In effect, the "disguised" compounds had gained entry into the cancer cells and set them up for a more effective x-ray "punch," without similarly weakening surrounding normal cells.

With more investigation, Dr. Szybalski said, the findings might provide the basis for a new method of cancer treatment for those kinds of cancer which are affected by radiation. Aside from the possible future practical applications, the use of this halogenated DNA might open up long-range possibilities for explaining the way in which DNA operates, which is a long-standing scientific mystery. Part of this large question involves the "tailoring" of hereditary characteristics, a possibility which is not much past the speculation stage at present.

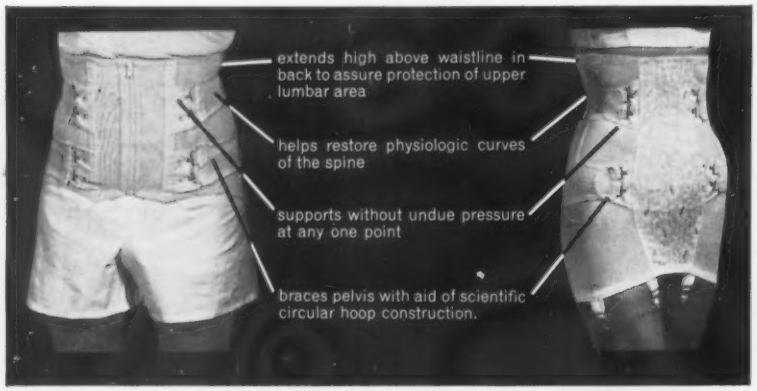
Dr. Szybalski also speculated that halogenated DNA might be a tool in future investigations into some of the mysteries of life, for example, in attempts by man to manufacture life in the laboratory in the form of biologically functional, life-bearing DNA molecules.

CAMP

LUMBO-SACRAL SUPPORTS

steady and limit motion of the lumbosacral and sacro-iliac joints

As part of a conservative treatment program, resting the spine with the aid of Camp orthopedic supports helps in relieving low back pain due to injuries, postural or occupational strains, arthritis and certain other conditions of disease affecting the lumbar area. Camp's lumboscral supports for men and women are scientifically designed to immobilize, form and rest the back from the dorsolumbar junction to an anchor point well down over the sacrum. To meet the patient's specific needs, styles with side lacing, back lacing or no lacing are available. A common complaint confronting physicians today is back pain, and Camp supports can aid in easing pain and muscle spasm besides facilitating the restoration of the physiologic curves of the spine.


extends high above waistline in back to assure protection of upper lumbar area
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CAMP

More Diabetics

The number of diabetics in the United States has increased greatly in recent decades, it is reported by statisticians of the Metropolitan Life Insurance Company.

Currently there are about 1,500,000 known cases of diabetes in this country, according to data derived from the current U. S. National Health Survey. This is equivalent to 9 per 1,000 population. The number of diabetics now is more than double that in 1937, estimated from the first National Health Survey. The increase is largely due to population growth — particularly at the older ages — and the greater longevity of diabetics.

The new survey indicates that known cases of diabetes are about one and a third times as frequent among females as among males for all ages combined. In both sexes, the large majority of diabetics are past midlife; more than 80% are 45 or older, and nearly 40% are at ages 65 and over.

Fewer diabetics than in the past succumb to the disease itself. In 1959 only about 28,000 deaths were ascribed to diabetes. This is scarcely half the number of deaths from all causes that occurred among diabetics. Chronic diseases, particularly those of the cardiovascular system, are now by far the chief causes of death among diabetics. Analysis of the experience among diabetic patients of the Joslin Clinic in Boston during 1956-59 showed that three fourths of all the deaths were due to the cardiovascular-renal diseases, the bulk of them resulting from coronary artery disease. It is noteworthy that diabetic coma was responsible for less than 1% of the deaths in this study.

Loves Labor Lost

Stealing an on-the-job kiss is sufficient grounds for dismissal, rules the National Labor Relations Board. Not only was the kiss on company time, but "it was against the will of one of the parties," the Board says. Date of ruling: Valentine's Day.

The Heart Beats Faster

With a compact, electronic transmitter developed by Hal F. Shulte, Jr., of the University of Michigan Department of Electric Engineering, medical researchers can now study human work loads in a wide variety of situations by remote control. Using corn pads as adhesives, two light electrodes are secured to the subject's chest and one to the lower portion of the back. Fine wires connect these to the transmitting belt, which weighs about one pound and is worn about the waist. Data are received on an FM set and recorded on an electrocardiograph.

Experiments conducted at the University since 1959 show that well trained young athletes commonly average 160 heart beats per minute while playing tennis, volleyball, bowling, running, etc. This is about twice the normal rate and much higher than most experts expected.

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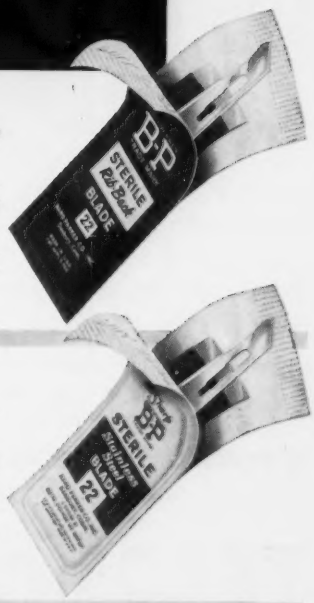

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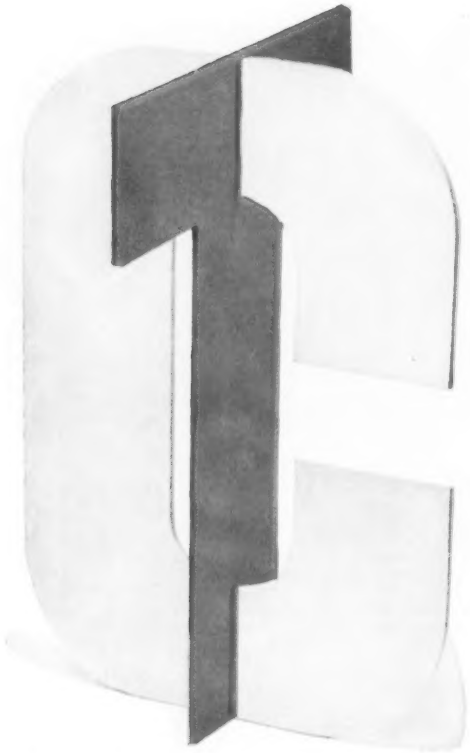

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exceptional tolerance

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IN BRIEF

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Indications: Topical Ointment – prevents or combats inflammation and infections in pyodermas, allergic and contact dermatoses, wounds, minor burns, and other inflammatory skin conditions with superimposed infections. Eye/Ear Suspension – prevents or combats inflammations of the external eye and ear and of the anterior ocular segment due to allergy, trauma, or infection due to TERRAMYCIN-sensitive organisms.

Supplemental oral antibacterial therapy is advisable in the treatment of severe infections or those which may become systemic.

Administration and Dosage: Topical Ointment – After thorough cleansing of affected skin areas, a small amount of ointment should be applied gently. Repeat up to four times daily. When actual infection is present, apply on sterile gauze for continuous contact with affected area.

Eye/Ear Suspension – *Ocular Conditions:* 1 or 2 drops into the affected eye three times daily. *Otic Conditions:* In external ear canal disorders, 2 to 4 drops three times daily, or as required. Keep dropper out of contact with infected area. In eye/ear infections that are deep-seated or spreading, systemic therapy should be employed concurrently.

Side Effects: Few instances of hypersensitivity to topically applied hydrocortisone have been reported. Allergic reactions to TERRAMYCIN are infrequent. TERRA-CORTRIL Topical Ointment or Eye/Ear Suspension should be discontinued if such reactions occur and are severe.

Precautions and Contraindications: Broad-spectrum antibiotics may cause overgrowth of nonsusceptible organisms, e.g., monilia, resistant staphylococci. If this occurs, discontinue the medication and take appropriate countermeasures. Topical Ointment: Allergic reactions to oxytetracycline are rarely encountered. With the possible exception of herpes simplex and second-degree burns, there are few dermatologic contraindications to topical use of hydrocortisone. Eye/Ear Suspension: There is considerable evidence that corticosteroids may be contraindicated both topically and systemically in certain infectious conditions of the cornea – particularly herpetic infections (dendritic keratitis, superficial punctate keratitis) and epidemic keratoconjunctivitis.

Supplied: Topical Ointment – In 1/6-oz. (5.0 Gm.) and 1/2-oz. (14.2 Gm.) tubes, containing 3% oxytetracycline (Terramycin®) hydrochloride and 1% hydrocortisone (Cortril®) alcohol in each gram of petrolatum base.

Eye/Ear Suspension – In 5 cc. amber bottles with sterile dropper. Each cc. of TERRA-CORTRIL Eye/Ear Suspension contains 5 mg. of oxytetracycline HCl (Terramycin®) and 15 mg. of hydrocortisone (Cortril®) acetate in a gel-like base of controlled viscosity.

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1. Karnaky, K.J., Tri-State Med. Journal, June, 1960
2. Schaefer, George, Clin. Obst. & Gynec., June, 1959
3. Burrus, Swan, Jr., Am. J. Obst. & Gynec., Aug., 1960
4. Liswood, R., Obst. & Gynec., May, 1959

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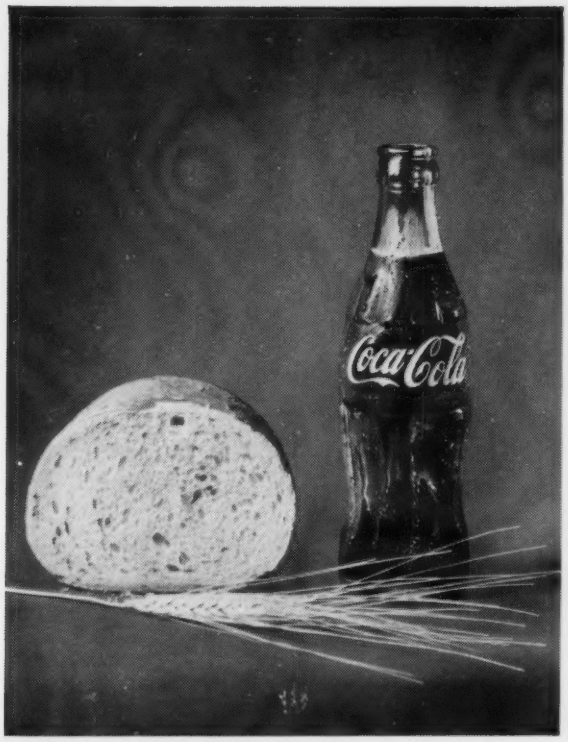

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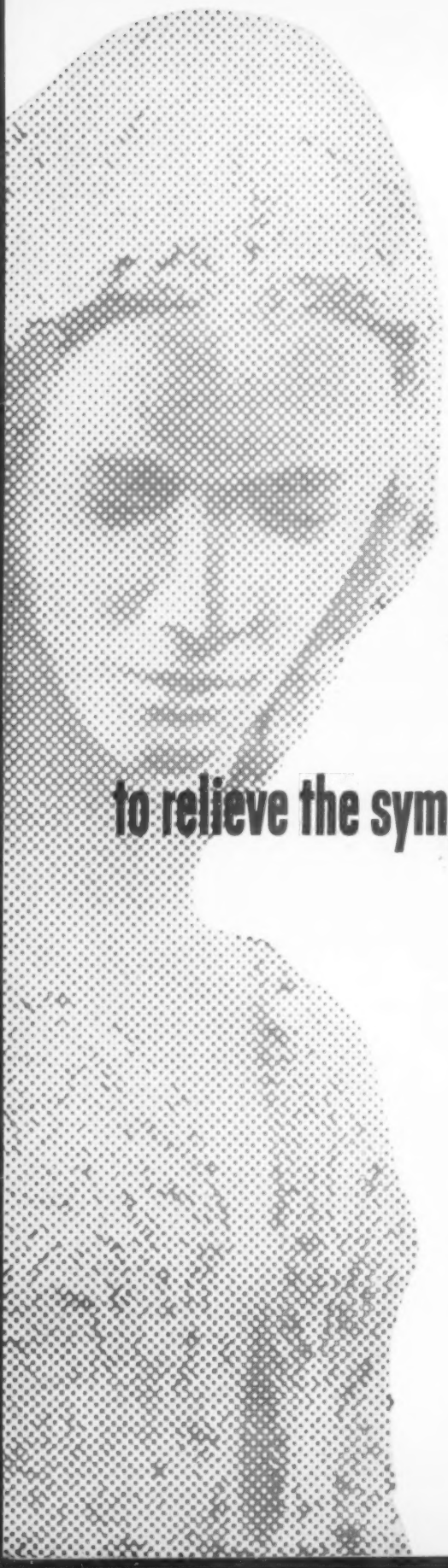

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1. Crawford, O. B.: Anesthesiology 14:278, 1953. 2. Wiedling, S.: Xylocaine, The Pharmacological Basis For its Clinical Use, Stockholm, Almquist and Wiknell, 1959.

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